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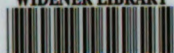
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THE



**TWENTY-SIXTH ANNUAL REPORT**

**OF THE**

**MICHIGAN**

**DAIRYMEN'S ASSOCIATION**

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**JULY 1, 1909, TO JUNE 30, 1910**

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**COMPILED BY**  
**S. J. WILSON**  
**SECRETARY**



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**BY AUTHORITY**

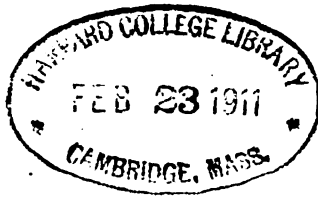
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**LANSING, MICHIGAN**  
**WYNKOOP HALLENBECK CRAWFORD CO., STATE PRINTERS**  
**1910**



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## LETTER OF TRANSMITTAL.

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Michigan Dairymen's Association,  
Office of the Secretary.

Flint, Mich., July 1, 1910.

To His Excellency, Fred M. Warner, Governor of the State of Michigan :

I have the honor to submit herewith, as required by statute, the accompanying report of the Michigan Dairymen's Association, showing the receipts and disbursements for the year; also papers and stenographic report of the Twenty-sixth Annual Convention, held at Detroit, Feb. 1, 2, 3, and 4, 1910.

Respectfully yours,  
S. J. WILSON,  
Secretary.



OFFICERS OF THE  
MICHIGAN DAIRYMEN'S ASSOCIATION.

July 1, 1909, to June 30, 1910.

PRESIDENT.

T. F. Marston ..... Bay City.

VICE PRESIDENT.

F. H. Vandenboom ..... Marquette.

SECRETARY AND TREASURER.

S. J. Wilson ..... Flint.

DIRECTORS.

Leonard Freeman ..... Fenton.

W. F. Raven ..... Brooklyn.

Ira O. Johnson ..... Detroit.

Henry Rozema ..... Fremont.

Charles R. Webb ..... Chesaning.

CHEMISTS.

Dr. C. E. Marshall ..... Agricultural College.

Victor C. Vaughan, Dean of U. of M. .... Ann Arbor.



# MEMBERS OF THE MICHIGAN DAIRYMEN'S ASSOCIATION.

## LIFE MEMBERS.

Bates, Hon. E. N. ....	Moline	Smith, Director C. D., Piracicaba,	
Haven, E. A. ....	Bloomington	Province of St. Paul, Brazil, South	
Horton, Hon. G. B. ....	Fruit Ridge	.....	America
Lillie, Colon C. ....	Coopersville	Stowe, E. A. ....	Grand Rapids
Marshall, Dr. C. E. ....	East Lansing	Vaughan, Victor C., Dean of U. of M.	
Monrad, J. H., Coopenhagen, O. Denmark		.....	Ann Arbor
McBride, James N. ....	Burton	Warner, Gov. Fred M. ....	Farlington
Rabild, Helmer, Dairy Division. ....		Wilson, S. J. ....	Flint
.....	Washington, D. C.	Wright, A. W. ....	Alma

## ANNUAL MEMBERS.

July 1, 1909, to June 30, 1910.

Adams, E. G. ....	Wayland	Benson, C. C., Box 11 ....	Lansing
Albion Creamery Co. ....	Albion	Benson, Geo. T., 1422 Pine Grove ave.	
Allen, Wm. ....	Franklin	.....	Port Huron
Akey, David L. ....	Colon	Best, Alva ....	Remus
Am. Farm Produce Co. ....	Owosso	Best, Wellington ....	Mt. Clemens
Anderson, Christian ....	Coloma	Biersborn, Harry, R. D. 3. ....	Mt. Clemens
Angevine, Chas. J. ....	Coldwater	Billsborrow, C. H., R. D. 3. ....	Paw Paw
Appel, J. C. ....	Marlette	Bird, L. R. ....	Brighton
Armstrong, A. J. ....	Amble	Bishop, Jack ....	Buchanan
Armstrong Cork Co. ....	Pittsburg, Pa.	Bliss, John ....	Utica
Armstrong, M. B. ....	Pontiac	Blumlein, Wm. ....	Frankenmuth
Armstrong, M. J. ....	Amble	Boehmcke, F. E., 300 Greenwich St.	
Austin, Eugene ....	Coopersville	.....	New York, N. Y.
Bailey, J. L., 203 Everhardt St. ....		Bosch, Chas., R. D. 3. ....	Hudsonville
.....	Jackson	Bosworth, Jesse L. ....	Colon
Baldwin, J. F., 12 Brush St. Depot,		Bovee, Guy A. ....	Woodland
.....	Detroit	Bovee, Windsor ....	Henderson
Ballard, Harry, R. D. 4. ....	Niles	Bradley, Frank E. ....	Farlington
Barger, Fred C. (2 yrs.) ....		Breckenridge Creamery Co. ....	
158 Franklin St. ....	New York, N. Y.	.....	Breckenridge
Barnaby, W. A. ....	Adrian	Brice, W. R. & Co, 21 So. Water St.	
Barnes, Alger B. ....	Byron	.....	Phila, Pa.
Barnes, Volkert, R. D. 1. ....	Newaygo	Bristol, Clarence, R. D. 5 ....	Fenton
Bartlett, C. S. ....	Pontiac	Britten, Arthur H. ....	Goodrich
Bartlett, R. S. ....	Pontiac	Brooks, A. W. ....	Brooklyn
Barton, David B. ....	New Troy	Brown, A. L. ....	Wooster
Bascome, D. T. ....	Montgomery	Brownell, Geo. H., 70 W. Larned St.,	
Batten, John ....	Avoca	.....	Detroit
Bechtel, W. H. ....	Caro	Brumm, Roy S., R. D. 5. ....	Nashville

Bueche, J. A. .... New Lothrop  
 Burger, C. F., R. D. 4 .... Saginaw  
 Burns Creamery Co. .... Grand Rapids  
 Burnap, J. D., 119 St. Clair St. ....  
 .... Toledo, Ohio  
 Burroughs Adding Machine Co. .... Detroit  
 Burrell, D. H. & Co. .... Little Falls, N. Y.  
 Butler, R. A. .... Capac  
 Carlsen, Emery E., 18 S. Terrace St. ....  
 .... Muskegon  
 Carnes, Perry .... Benton Harbor  
 Cartwright, Ed. D. .... Mayville  
 Caven, Geo., 154 Lake St. .... Chicago  
 Chevie, F. A. .... Imlay City  
 Chamberlain, F. M. .... Ann Arbor  
 Clement, R. P., R. D. 5. .... Adrian  
 Cobb, L. .... Vassar  
 Colvin, I. E. .... Hudson  
 Conant, A. B. .... Mosherville  
 Conaton, M. .... Bad Axe  
 Coville, A. L. .... Charlotte  
 Cook, T. A. .... Brant  
 Coon, F. H. .... Hemlock  
 Craig, Donelson .... Detroit  
 Crawford, Thos. B. .... Almont  
 Croman, E. A. .... Grass Lake  
 Crossfield, F. A., R. D. 19. .... Galesburg  
 Curtis & Curtis .... Lyons  
 Dalley, A. B. .... Ray, Indiana  
 Dairy Record .... St. Paul, Minn.  
 Darling, H. H. .... Coopersville  
 Davis, W. H. .... Crosswell  
 Davis, Ward M. .... Washington  
 Deake, Clayton .... Salem  
 Dear, Chas. H. .... Novi  
 Dear, W. A. .... Perrinton  
 DeGraw, Wm. J. .... Lamb  
 Dennis, J. .... Novi  
 Denison, Oscar .... Yale  
 Dent, F. B. .... Hanover  
 Diehm, J. J. .... Remus  
 Doran, Wm. .... Ithaca  
 Dubendorf, Wm. .... Coopersville  
 Duell, A. L. .... Grand Ledge  
 Edison, Milo H., R. D. 2. .... Grand Rapids  
 Ebmyer, John .... Sandusky  
 Eisenlord, N. J. .... Farmington  
 Eldridge, Fred L. .... Breckenridge  
 Ellis, O. A. .... Rochester  
 Ellis, Irving, W., R. D. 2. .... Washington  
 Elliot, G. S. .... Troy  
 Elmer, Ellsworth O. .... Devereaux  
 Ellwanger, R. J. .... Grand Rapids  
 Enterline, J. T. .... Wayne  
 Esterline, E. .... Hillsdale  
 Faber, Henry H., R. D. 2. .... Zeeland  
 Fay, Fred, 15 Harrison St. ....  
 .... New York, N. Y.  
 Felske, Arthur .... Avoca  
 Ferguson, F. L. .... Berville  
 Finch, C. A., R. D. 6. .... Paw Paw  
 Fitch, Porter, 10 Harrison St. ....  
 .... New York, N. Y.

Fitzpatrick, H. P. .... Middletown  
 Foster, Floyd O., 806 Howard St. ....  
 .... Detroit  
 Frary, R. F. (2 yrs.) .... Lapeer  
 Frary, Mrs. R. F., 46 Saginaw St. ....  
 .... Lapeer  
 Freeman, Leonard (2 yrs.) .... Fenton  
 Fremont Creamery Co. .... Fremont  
 Freeport Creamery Co. .... Freeport  
 Fuller, E. M. .... Hart  
 Gargett, Geo. J. .... Alma  
 Geissel, J. C., 36 Harrison, St. ....  
 .... New York, N. Y.  
 Gibson, Joseph, 165 Broadway. ....  
 .... New York, N. Y.  
 Glasser, G. H. .... Bancroft  
 Glasson, Joseph, R. D. 6 .... Ypsilanti  
 Goodyear, James H., 198 Baltimore,  
 W. .... Detroit  
 Greer, H. J. .... Mayville  
 Gregory, M. C. .... Unadilla, N. Y.  
 Griffith, M. J. .... Peck  
 Grove, C. A. .... Litchfield  
 Hack, C. F. .... Gera  
 Hadsall, C. E., R. D. 1 .... Troy  
 Hagedorn, S. .... Fenton  
 Hagerty, J. E. .... Auburn Jct. Ind.  
 Hall, Walter .... Owosso  
 Halpin, T. C., 3133 Griswold .... Detroit  
 Halter, Joe, care Corn Products Re-  
 fining Co. .... Chicago, Ill.  
 Hansen, L. B. .... Bronson  
 Harlow, Edgar D. .... Burlington  
 Harris, Gilbert .... Dryden  
 Harris, John J. .... Wyandotte  
 Harriman, J. C. .... Blissfield  
 Hart, F. T. .... Pigeon  
 Hatch, L. M. .... Big Bay  
 Harris & Throop .... Detroit  
 Hayes, H. J., 1013 Com. Bank Bldg.,  
 .... Chicago, Ill.  
 Hebert, J. E. .... Caseville  
 Hendershott, Floyd, M. .... Parma  
 Hiel, Neal .... Hersey  
 Hill, James B. .... Saginaw  
 Hill, Thomas, 206 Hammond Bldg.,  
 .... Detroit  
 Hillman, B. A. .... Metamora  
 Hoar, J. L. .... Chicago, Ill.  
 Hoodemaker, D. A. .... Salem  
 Hoffman, J. B. .... Oakley  
 Homes, R. E. .... Montgomery  
 Hopkins, W. Claude, R. D. 5. .... Yale  
 Hopkins, R. F. .... Davison  
 Horton, N. B. .... Morenci  
 Houston, S. S. .... Pontiac  
 Hubinger, L. .... Frankenmuth  
 Hull, N. P. .... Dimondale  
 Hupp, Geo. C. .... Bingham  
 Hunter, Walton & Co., 33-35 Kinzie St.  
 .... Chicago, Ill.  
 Ireland, W. J., R. D. 1. .... Cass City  
 Ives, R. L. .... Greenville

Jankoski, Frank S. .... Hilliards  
 Jenkins, D. A. .... Ida  
 Jenns, Louis H. .... Grand Rapids  
 Johnson Bros. .... Detroit  
 Johnson, Ira O., 126 Broadway. ....  
 .... Detroit  
 Johnston, Robert .... Woodstock, Ont.  
 Jones, D. A. .... Durand  
 Jones, Frank .... Mt. Clemens  
 Jordan, W. F. .... Mt. Clemens  
 Kalamazoo Creamery Co. .... Kalamazoo  
 Kane, W. J., 5934 Spruce St., ....  
 .... Phila. Pa.  
 Kaser, Chas. R. D. 19 .... Reading  
 Kemmer, Chas. .... Allegan  
 Kemper, W. H. .... Sandusky  
 Ketchum, D. B. .... LeRoy  
 Kerr, L. R. .... Sandusky  
 Keyworth, C. H. .... Coleman  
 Kimball, N. D., 513 Fernwood Ave., ....  
 .... Toledo, Ohio  
 Keifer, P. H., 21 Jay St. ....  
 .... New York, N. Y.  
 Kuech, Frank .... Grindstone City  
 Kimball, Geo. H., Jr., R. D. 5. .... Pontiac  
 King, Claude E. .... Concord  
 Kleinhessel, Bert .... Filmore Center  
 Kloosterman, John .... Clarksville  
 Krans, Geo. M., R. D. 1. .... Monroe  
 Kruschinsky, Fred ....  
 Ladd, J. H., 920 Washtenaw St., Lansing  
 Ladd, John W. .... Saginaw  
 Lakeside Elgin Butter Co., Grass Lake  
 Langtry, Geo. J., 1115 9th St. ....  
 .... Port Huron  
 Larsen, Chas. .... Brown City  
 Leach, T. A. .... Richmond  
 Leavenworth Bros., R. D. 7. ....  
 .... Grand Rapids  
 Leibum, Chris. .... Orleans  
 Lewis, C. V. .... Boston, Mass.  
 Licht, John .... Warren  
 Lillie, Chas. P. .... Coopersville  
 Liverance, W. B. .... East Lansing  
 Lockwood, Clifford D. .... Athens  
 Lokker, Henry .... Midland  
 Lyle, G. W. .... Globeville  
 Lyon, J. D. .... Buchanan  
 Lyon, O. J. .... Waterville, Ohio.  
 Long, P. D., R. D. 8. .... Grand Rapids  
 Linton, Chas. .... Bloomingdale  
 McCallum, A., R. D. 1. .... Cass City  
 McCandlish, Frank E. .... Goodrich  
 McCandless, G. E., Majestic Bldg., ....  
 .... Detroit  
 McCormick, Archie .... Evart  
 McCourtie, Albert .... Willis  
 McDonnell Bros., 35 W. Woodbridge. ....  
 .... Detroit  
 McGill, B. A., 1064 Webster St. ....  
 .... Traverse City  
 McKeon, E. W., Cadillac Hotel. .... Detroit  
 McKnight, R. J. .... Saginaw

McNeil, Chas. E. .... Chicago, Ill.  
 MacNeil, F. .... Fostoria  
 Marcero, Chas. .... New Baltimore  
 Marlow, Geo. .... Mayville  
 Marston, T. F. .... Bay City  
 Martin, B. C. .... White Cloud  
 Martin, R. J. .... Mulliken  
 Martin Creamery Co., .... Martin  
 Mather, Milton .... Traverse City  
 Mead, James, R. D. 2 .... Grand Ledge  
 Meinhardt, F., 618-115 Adams St., ...  
 .... Chicago, Ill.  
 Mersman, John, R. D. 8 .... Grand Rapids  
 Meyer, Arend P., R. D. 3. .... Hudsonville  
 Meyer, M. H. .... Madison, Wis.  
 Miles, S. R. .... Buchanan  
 Miller, D. P. .... Almont  
 Miller, J. C., Jr., care J. W. Ladd. ....  
 .... Saginaw  
 Miller, Lloyd C., Box 7. .... Centerville  
 Miller, Geo. E. .... Armada  
 Mills, John W. .... Kingston  
 Minnich, Frank P. .... Charlotte  
 Muir, Will .... Imlay City  
 Mossner, P. C. .... Gera  
 Mount, L. C. .... Homer  
 Munger, Henry .... Reece  
 Murphy, Morris, 229 S. Water St. ....  
 .... Chicago, Ill.  
 Murray, R. A. .... Byron  
 New Haven, Elgin Creamery Co., ....  
 .... New Haven  
 Niles, H. R. .... Flint  
 Norton, H. W. .... Howell  
 Notten, Fred .... Grass Lake  
 Nunneley, Mrs. A. S. .... Portland  
 Nunneley, Arthur S. .... Portland  
 Nyenhuis, Jacob, R. D. 3. .... Hudsonville  
 N. Y. Produce Review, 175 Chambers  
 .... New York, N. Y.  
 Olin, R. M. .... Caro  
 Osterhouse, Barney .... Caro  
 Orr, Chris. .... Caro  
 Orton, Ellsworth, M. D. .... Pontiac  
 Otter, Chas. H. .... St. Clair  
 Overton, Glen .... Burnips Corners  
 Owen, Bert .... Grand Rapids  
 Parker, C. H., 314 N. 3rd St. .... Saginaw  
 Parker, F. A. .... Lansing  
 Parshall, Dwight M., R. D. 6. .... Howell  
 Partch, C. M. .... Armada  
 Peterson, Bert G. .... Clarks Lake  
 Phall, Wm. .... Hemlock  
 Phillips, J. F. .... Pigeon  
 Pickelman, Geo. .... Birch Run  
 Pickett, J. A. .... Millington  
 Pierce, Archie R. .... Scotts  
 Pierson, S. H., R. D. 2. .... Goodrich  
 Plumbhoff, Fred W. .... New Era  
 Pohl, Joseph .... Westphalia  
 Power, J. F. .... Quincy  
 Powers, Russell .... Ravenna  
 Preston, G. W. .... Ypsilanti



Probert, H. F., Box 14 ..... Jackson  
 Pullen, G. J. .... Leslie  
 Quackenbush, H. B. .... Iron Mountain  
 Radke, W. H., 42 E. Madison St. ....  
 ..... Chicago, Ill.  
 Randall, A. N. .... Vestaburg  
 Raven, W. F. .... East Lansing  
 Read, Chas. P., R. D. 2 ..... Howell  
 Reed, R. C. .... Howell  
 Reed, Wm. .... Perry  
 Reichle, C. J. .... Camden  
 Reid, Ira. K., R. D. 2 ..... Cass City  
 Reist, C. E. .... Maple Rapids  
 Renner, Frederick C. .... Chelsea  
 Renbarger, C. E. .... Niles  
 Reicholz, John C. .... Hemlock  
 Reynolds, H. T. .... Lucas  
 Rice, E. J. .... New Hudson  
 Richards, Chas. P. .... Plainwell  
 Rider, G. H. .... Almont  
 Ricker, P. G. .... White Pigeon  
 Riverside Co. .... Adrain  
 Robins, D. L. .... Port Huron  
 Robert, Alton T. .... Marquette  
 Roche, Bert ..... Farmington  
 Rock Island Butter Co., 123 Superior  
 St. .... Toledo, Ohio  
 Rockwood, J. A. .... Hastings  
 Rohrer, J. M. .... Grass Lake  
 Ross, John E. .... Brown City  
 Rouse, R. B. .... Ypsilanti  
 Rozema, Henry ..... Fremont  
 Rudd, C. W. & Son ..... Detroit  
 Ruff, John F. .... Port Huron  
 Sackrider, Fred T., R. D. 5 .... Jackson  
 Sanderlin, Ray E. .... Portland  
 Sass, H. J. .... Pigeon  
 Sauber, W. A. .... New Haven  
 Schoch, Mrs. Fred S., R. D. 1 .... Troy  
 Shont, John ..... Borculo  
 Schlichter, Wesley ..... Brown City  
 Schlosser, Chris. .... New Baltimore  
 Schwanbeck, E. .... Utica  
 Seelye, L. E. .... Lapeer  
 Seibert, A. C. .... Nashville  
 Shaver, Ira A. .... Omer  
 Shaw, Mrs. Frank W. .... Goodrich  
 Shaw, Frank W. .... Goodrich  
 Shiel D. W. .... Hillsdale  
 Sigafoose, L. R. .... Montgomery  
 Simmons, John ..... Alpena  
 Slater, L. A. .... Tipton  
 Smith, C. J. W., 340 Commonwealth  
 Ave. .... Detroit  
 Smith, Edwin H., R. D. 1 ..... Salem  
 Smith, J. Fred ..... Byron  
 Smith, F. M. .... Hillsdale  
 Smith, F. S. .... Hersey  
 Smith, Geo. T. .... Portland  
 Smith, Harold C. .... Wyandotte  
 Smith, L. C. .... Austin  
 Smith, Lucas, 30 S. Market St. ....  
 ..... Boston, Mass.

Sortor, R. G. .... Breckenridge  
 Sowles, Geo. W. .... Hesperia  
 Stafford, F. E., 508 W. John St. ....  
 .... Bay City  
 Starks, C. L. .... Caro  
 Sterling, J. C. .... Monroe  
 Stewart, Shipley .... Saginaw  
 Stillwell, Lorenzo .... New Hudson  
 St. John, A. F. W., Majestic Bldg. ....  
 .... Detroit  
 Stroh, Clyde H. .... Union City  
 Sudendorf, E., 154 Lake St., Chicago, Ill.  
 Sunday, Geo. P. .... Constantine  
 Superior Churn Mfg. Co. .... Northville  
 Swank, Claude C., R. D. 1 .... Buchanan  
 Swanson, Harry, R. D. 3 .... Grant  
 Taylor, Daniel, 2464 Hamilton St. ....  
 .... Chicago, Ill.  
 Tecumseh Butter Co. .... Tecumseh  
 Teterson, Loren .... Reading  
 Timmerman, H. C., 23 Robinson Ave. ....  
 .... Grand Rapids  
 Thibideau, A. F., Shelby Bldg. ....  
 .... Detroit  
 Tomlinson, Wm. F., R. D. 2 ....  
 .... New Baltimore  
 Toole, P. O. .... Merrill  
 True, Geo. A. .... Armada  
 Union Cheese Co. .... Frankenmuth  
 Uphouse, A. J. .... Ida  
 Urban, John .... Bay City, W. S.  
 Vandenboom, F. H. .... Marquette  
 Vassold Bros. .... Midland  
 Vernon, Winfield .... Ewen  
 Vivian, Andrew .... Monroe  
 Yugteveen, John .... Holland  
 Waite, L. C. .... Coldwater  
 Warner, Richard Jr., 57 Broadway. ....  
 .... Grand Rapids  
 Warren, E. J., R. D. 1 .... Battle Creek  
 Waterman, Dr. Geo. A., Box 88. ....  
 .... East Lansing  
 Wattles, H. B. .... Troy  
 Webb, Chas. R., Box 63 .... Chesaning  
 Webster, T. E. .... Bay City  
 Wehrle, Louis .... Marshall  
 Weiskerich, J. C. .... Metamora  
 Westphalia Creamery Co. .... Westphalia  
 Westra, Abel .... Fremont  
 Wever, John .... Zeeland  
 Whitaker, Geo., 411 E. Fifth. .... Flint  
 Whitehead, Otis H. .... Coleman  
 Willsie, Mrs. M. H., R. D. 7 .... Caro  
 Wilson, C. J. .... Bauer  
 Winters, Ed., 1101 Eleventh St. ....  
 .... Port Huron  
 Woodin, J. B. .... Detroit  
 Woolsey, Chas. .... Morrice  
 Wright, Chas. H. .... Tecumseh  
 Yetter, Geo. T. (2 yrs.) R. D. 2 ....  
 .... Eau Claire  
 Zuehlk, Henry W. .... New Haven

## ACT 263, PUBLIC ACTS 1909.

AN ACT to authorize the Michigan Dairymen's Association to hold an annual meeting and such auxiliary meetings as may be determined by the association, and making an appropriation therefor.

*The People of the State of Michigan enact:*

SECTION 1. The Michigan Dairymen's Association is hereby authorized to hold one annual meeting and as many auxiliary meetings each year, and at such place or places, as may be decided upon by said association, for the dissemination of knowledge pertaining to dairying and dairy products among the people of the State, and said association shall formulate such rules and regulations as it may deem proper to carry on the work contemplated in this act, and it may employ an agent or agents to perform the duties in connection therewith as it may deem best.

SEC. 2. For the purposes mentioned in the preceding section the said Michigan Dairymen's Association may use such sums as it shall deem proper, not exceeding three hundred dollars, for the necessary current expenses of the Michigan Dairymen's Association each year. All of which the State Treasurer shall pay to the said association on the warrants of the Auditor General from time to time as its vouchers for the same shall be exhibited and approved.

SEC. 3. The Auditor General shall incorporate in the State tax for the year nineteen hundred nine the sum of three hundred dollars, and for the year nineteen hundred ten, the sum of three hundred dollars, which amounts, when collected, shall be credited to the general fund to reimburse the same for the moneys hereby appropriated.

This act is ordered to take immediate effect.

PATRICK H. KELLEY,  
President of the Senate.

COLON H. CAMPBELL,  
Speaker of the House of Representatives.

Approved  
FRED M. WARNER,  
Governor.



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**PROCEEDINGS**  
**OF THE**  
**TWENTY-SIXTH ANNUAL CONVENTION**  
**OF THE**  
**MICHIGAN DAIRYMEN'S ASSOCIATION**  
**HELD AT**  
**DETROIT, MICHIGAN, FEBRUARY 1, 2, 3, 4, 1910.**

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The twenty-sixth annual meeting of the Michigan Dairymen's Association convened at Detroit, in the Wayne Hotel Gardens, at 10 o'clock, A. M., February 1, with President T. F. Marston in the chair.

The Chairman: Ladies and gentlemen, you will please come to order. In the absence of music, which we do not seem to be provided with, the first on the program is the Address of Welcome, which will be given by the Mayor of the city. I take pleasure in introducing to you Mayor Breitmeyer:

#### ADDRESS OF WELCOME.

Mr. Chairman and Gentlemen:

I may say, ladies and gentlemen, though I do not know whether the ladies are a part of this convention, or whether they are attached to their husbands. Nevertheless, I want to bid you all a welcome to the city of Detroit. We here are proud of our city. We do not know of any short-comings, and I want to say to you before going further, that while you are invited here by the committee who is in charge of this convention, and while the city of Detroit has also invited you here,—you are our guests—yet if you see any short-comings, just report the same to the Mayor, and we will try to see to it that the next time you come to our city you will find these things overcome.

I see by your program that this is the twenty-sixth time you have met in like capacity; and I understand that fourteen years ago you met here in Detroit. Those of you who attended that meeting and are present here today can realize that you are meeting today under much more favorable circumstances than then. At that time you could not find in the city such a place where you could hold an exhibit such as you are making today. All this, you will admit, indicates progress for the city of Detroit.

You are all interested in Detroit, the metropolis of Michigan, as much so as we are, and to the few who are here from outside the state—and I was talking with one gentleman from New York, and another one from away down in Texas—I want you all to know that the city of Detroit is putting forth its best efforts to do what it can for its visitors.

A few days ago we met with the Bean Jobbers of Michigan, and I do not know but what Michigan to day is producing as much of this edible product as any state in the Union. We are glad to have all these

industries of the state meet with us here, and as the largest city in the state, we want to do all we can to entertain our guests that come here, and it is for that reason that we are more than pleased to have you with us.

The other day I had a talk with a gentleman, a newspaper man, by the name of Crampton, who had quite a good deal to do with the Warner-Crampton law. We here in Detroit are somewhat bothered with that law, but as I look out over this audience, I can not see any men who would be apt to bother themselves about the Warner-Crampton law, for they have milk to drink and dairy products to eat. But the law has its purpose, and while I do not know, I doubt not that the Governor, who is also a member of this Association, got in his good work on this subject, so that the standard of the products in the butter, milk and cheese line is very high. Therefore I think this Association should be very happy to have a man in its midst like Governor Warner, who is so keenly interested in the success and high standing of the Association.

I want again to bid you a hearty welcome to our city. I hope that your stay will be a pleasant one. Of course we can not give you any boat rides this time of year, but the best we have is at your service—you are welcome to it. (Applause).

### RESPONSE.

The Chairman: Mr. Mayor, I desire to say that we had selected one of our most brilliant and entertaining speakers to respond to your address of welcome, Mr. N. P. Hull, but for some reason Mr. Hull is not here, which we very much regret. And while I believe there are quite a number here who would be glad to respond to your welcome, under the circumstances all we can do is to thank you for the welcome you have given us, and to assure you that it is greatly appreciated by us all.

The Mayor: Pressing engagements require that I take my leave, and so, Mr. Chairman, I bid you good morning.

The Chairman: I will ask the Vice-President, Mr. F. H. Vandembloom, to take the chair.

Vice-president Vandembloom takes the chair.

Chairman: The next on the program is the address by the president of this Association, Mr. T. F. Marston, of Bay City.

## PRESIDENT MARSTON'S ANNUAL ADDRESS.

Mr. Chairman, Members of the Association:

It is with a lively appreciation of the privilege and of the honor of being your president that I greet you here today, this our 26th annual convention. In these 26 years the Michigan Dairymen's Association has seen many changes which have lead to a steady upward growth of the dairy industry; a growth much more rapid of late years than formerly. The past year has been an exceptional one. For a long time these changes were hardly noticeable but of late they have been more marked and the last year has seen all records of our existence broken in price, quality, demand, production, and general interest. Methods of marketing our products also have changed more rapidly of late years. Dairying as a business is becoming a business in the strict sense of the word and a business of respect and while at the present high prices of dairy products "slip-shod" methods may endure yet they are rapidly giving way to "up-to-date" methods. For even at the present high prices of dairy products it does not seem that they have increased proportionately with the price of feeds and cost of producing under the sanitary methods demanded today, so that it would seem possible to hope that the "slip-shod" dairyman will soon be a thing of the past. For some time it was the improvement in cows which enabled the dairyman to stand the increased cost of production and still leave his credits on the right side and this improvement in cows is not the least of the changes of the past few years. Cows producing 400 pounds of fat in a year are more or less general while those with records of 700 pounds can no longer be counted on the fingers of two hands, the 1,000 pound cow is not limited to one animal and work is now going on with cows the results of which are expected to break all previous records. Encouragement for the dairyman is wide spread and in this good work Michigan ranks among the foremost. Note the fact that Michigan was the first state to organize cow testing associations. While we have not so many of these associations as we would wish, this being due to lack of trained men to do the work, yet the day will come when a larger number and the good they do will be appreciated, and honor be given the man who introduced this system. Michigan I believe also was the first state to organize bull associations, a factor in the improvement of our live stock of the highest merit. It is history as to our Agricultural College being the first in the field. Our farmers are progressive as indicated by the local pedigreed stock associations, local dairymen's associations, and the clubs or associations of breeders of registered cattle. We dairymen are justly proud of, and can thank the Dairy and Food Department for the help and protection they have given us. Were the Michigan Dairymen's Association to be conceited it could claim no little credit for many of these advancements. Do you realize that it was under a former president of this Association that the Dairy and Food Department was organized on the present basis and that it was his



wisdom and foresight in selecting men to manage it that has made it the success it enjoys; while the successful working out to the dairymen's advantage is due to the capability and the practical knowledge of dairying that a second president of our Association has brought to the use of this department as the head of the dairy end. Members of this Association have been prominent in all places wherever assistance could be given to dairying. You will find our members are and have been connected with every progressive movement effecting the dairy interest. Fortunately they have been prominent in the legislature. Therefore we have laws which are extremely beneficial to us. However it is a poor policy, a sign of decay when we point only to our achievements of the past rather than what is necessary for the future. "Your old men shall dream dreams; your young men shall see visions." We are not here to gloat over past deeds but to look forward to new accomplishments.

#### IMPROVEMENT IN COWS.

We said boastingly, "there are many cows producing 400 pounds of butter per year," yet it must be acknowledged that there are altogether too many that do not produce one-half this amount. It is stated that the average is 150 to 200 pounds per year. If this be true what must be said of the man who keeps the cows giving the low amount which brings the average to this figure, the man keeping the cow which offsets every cow giving above 200 pounds? Public speakers, men of affairs, and writers are all talking with more or less brilliancy of the conservation of our natural resources, we dairymen, most particularly the man behind the cow must get up and practice this virtue without teasing. We must consider our cows and our farm as our resources. save in the way of labor, the land we use and the cows we keep. He who makes two blades of grass to grow etc., is true, yet he who makes one cow accomplish what it took two or even three cows to accomplish before does not only benefit mankind, but benefits himself likewise and should be entitled thereby to enrollment as a conservationist of no mean degree. Prices of products are good but also are the prices of feed most woefully high and the demand for sanitary methods are increasing, labor seems to be no cheaper, therefore let us turn our energies toward our machines,—the cows, and the soil. Manufacturers tell us that if they find a machine more efficient than the one they are using even though the efficiency be but one or two per cent yet they are compelled as a matter of economy to throw out the old and purchase the new. Now what can a farmer possibly be thinking of who keeps two, three or even four cows to do the work of one. It seems absurd but you know and we all know that such is the fact with the larger number of our dairymen. One trouble is that too few of us really know what we are doing. Figures as to exact cost of production are not easy for us. It is impossible and undoubtedly is not necessary for us to keep figures as carefully as does the manufacturer but that is no reason why we should not know approximately or some where near what 100 pounds butter or 100 pounds of milk costs us. This is one of the places where the cow testing associations would mean so much to us. If it is impossible to start a cow testing association which will keep a man em-

ployed steadily all the year then by all means organize a smaller one and arrange for some one to spend as many days as are necessary each month. It would be a good thing for each and every one of us to belong to one of these associations.

#### COW CONTESTS.

Iowa and Wisconsin have started State Cow Contests. These perhaps will be of much advantage to the dairy interest, so it might be a good thing if Michigan were to start one. While at the National Dairy Show I suggested this to Mr. Lillie. His reply is perhaps the key note to his particular success as a dairyman. This reply, "Yes! but base it on cost of production." So if Michigan is to have one organize it on a more practical basis and make it a contest in which cost of production shall be considered. There are many difficulties in doing this, but worked out satisfactorily, such a contest would be of vastly more importance than one where an enormous production is secured at a cost which leaves it at no practical benefit. So again if a cow contest is to be started let us as members of the Michigan Dairymen's Association organize one that will mean more than the selection of a few animals cared and fed regardless of expense, working only to make an enormous record.

#### MARKET MILK.

For years market milk has received but scant attention but of late we have seen it revolutionized and its importance is beginning to be recognized. Your program of this week acknowledges this. You have seen the time when market milk and cream was not even discussed during an entire session of our Association. I well remember the first meeting where the milk man was considered on the program; it was to the extent of one paper; now we have one whole day devoted to this subject.

Perhaps of all the changes in the industry those occurring in market milk are the greatest. As note the specialized dairy farms, the elaborate city milk plants, the production of certified and of sanitary milk, and the laws and city ordinances governing the business.

Until recently in cities of medium size milk was retailed at 5 and 6 cents per quart and was handled and produced in the crudest manner and though the dairy farmer from year to year saw the cost of feed and of labor increase and the demand for better methods become more insistent yet he received but little or no more than formerly and his salvation seemed to be based on better cows and more careful management. Now however the city consumer is being asked to pay a slight advance over this old price which held for so many years. This advance is not however in proportion to the advance in the cost of production nor is it in proportion to the increased demand as to quality. The price at which it is now sold in some cities seem too high to the consumer yet the consumer is slowly but surely learning that there is a difference in milk; that some is fatally dear at any price, and that some milk is worth considerably more than the old price, so much so, that we can find milk selling at 10, 12, and 15 cents per quart and even more. This is not universal, so the education of the consumer as to quality must continue.

For these changes in market milk have not been in price alone since there has been a vast improvement in quality also.

#### QUALITY OF DAIRY PRODUCTS.

This naturally brings us to the subject of quality. Your president told you in his address last year that if all milk produced were clean milk there would not be enough to supply the demand as people would use more milk, butter and cheese. He also told you that he could find no place to put the blame of unclean milk except on the shoulders of the farmer. This undoubtedly is true to the extent that the farmer has it in his power to be clean or otherwise. Yet I believe the consumer has so strenuously demanded that cost should govern; that it is the consumer that should rightly be blamed. I know that the difference between clean methods and filthy methods is not very great, but let the consumer take a greater interest, demand a better product and be willing to pay for the same and note how quickly the dairymen will grasp the opportunity to supply this demand. Perhaps the true rule of supplying demand may be for the farmer to supply a pure product and thereby create a demand for the same. Yet, is it not true that much of this big improvement is due to our better laws. It is our duty to educate the consumer and to improve our laws, laws for the protection, not of the milk *producer* but for the *consumer*. No consumer is going to buy dairy products produced under filthy conditions from impure sources, nor is he going to buy filled cheese, skimmed or watered milk, or imitation butter if he knows it, and the food laws are for his protection, and not for the purpose or object of benefiting the dairymen. Dairymen are not so narrow as to ask for class legislation on their own particular product or laws to compel a consumer to buy their product. They do ask, however, for laws which make it possible for the consumer to buy genuine dairy products properly produced if he so desires.

#### FOOD LAWS.

Michigan is peculiarly blest with good laws which protect the consumer against impure dairy products and these laws cannot be too strict. Thanks to our Dairy and Food Department; they are sane laws in their demands on the dairymen. We have since last year by the recommendation of our former president protected the consumer of ice cream by making it necessary that the ice cream contain at least 12% butter fat. Surely the person who buys ice cream has a right to demand that it be made of cream and not some of the products formerly used; and while incidentally, it may have helped the dairymen, yet we cannot for that reason call it class legislation. Of course, all laws demanding purity of food will have a tendency to make that particular food sell for a higher price. The butter maker seems to be securing a price for his product more nearly proportionately to the high cost of feeds than does the other branches of dairying; but let no one believe that the high price of butter is due to any sense of fairness, or due to any effort of the consumer to recompense the butter producer for these advances in cost production, but is it not due to the food law against Oleo being allowed to masquerade as butter. Oleo, perhaps, is good

and if a man desires to buy it let him do so. The price is really quite reasonable; but do these people who wish to use Oleo desire the laws changed so that they may pay a higher price for it? Surely they should know that Oleo masquerading as butter enables the Oleo manufacturers to obtain a higher price for their product than at present. No! it is because of the fact that with yellow Oleo on the market, butter will sell for a lower price, not because the consumer wishes to buy Oleo, but because many of the consumers will devour Oleo not knowing that it is not genuine butter. So let us continue in the securing of laws and regulations toward a cleaner and better product and against imitations, for genuine dairy products can never compete with the imitation in any of its various branches.

Education of the consumer should be carried on by us more extensively along the lines of pure dairy products; their healthfulness and as to their nutrient value.

Cheese should be used many times more extensively than it is. It is a food of high value, yet too many consider it only as a relish for pie.

Milk is considered as a liquid more or less useful in cooking and somewhat necessary for babies. Food value? No! Price per quart and cream line. And butter? Well, it helps to make bread taste better.

Why not publish more facts in regard to the true value, get out some newspaper articles and increase the demand. But we must keep our product clean and pure. Prices are high and we hope they will go higher; yet can any one safely say that the farmers of today are receiving more money for their products than they are justly entitled? So long as the farmer, cannot, as it is claimed, compete with the manufacturer for labor, just so long we may be sure that the farmer is not receiving more than his right for what he produces.

#### OLEOMARGARINE.

The fight will soon be on and every dairyman, everyone interested in dairying be he cheesemaker, buttermaker or milk producer, should support in a most active, and persistent manner, the crusade against the repeal of any of our protective laws. Let oleo be colored to represent butter and not be taxed and we will see how quickly our prices will change. Let no man interested imagine for one minute that any injury to butter will not fall sooner or later on his own shoulders. The consumer should also assist, but I fear too many skillful arguments are advanced in paid advertisements and otherwise for us to expect much assistance from him.

#### AUXILIARY DAIRY MEETINGS.

Not much work along this line has been accomplished since the beginning of our fiscal year as could be desired. Perhaps this may be due to the regulations adopted at our last annual meeting demanding more financial support from the community in which an auxiliary meeting was held. If this be the reason, perhaps it would be well to change the regulation. For it is our work and privilege to do all we can to further the interests of dairying and auxiliary associations should prove an active factor.

Dairying is becoming a greater industry each year and we hope that Michigan, with its natural advantages will be in the lead; but it is up to us to keep a shoulder to the wheel, doing our utmost to keep Michigan products above suspicion for by doing so we can, with the present trend, place Michigan products second to none.

The Chairman: We will now listen to the secretary's report, which will be given by Mr. S. J. Wilson, the secretary.

### REPORT OF THE SECRETARY.

To the Officers and Members of the Michigan Dairymen's Association:  
Gentlemen—At a meeting of the executive committee, held in the secretary's office on August 5th, 1909, the following members were present:

Mr. T. F. Marston, President; Mr. S. J. Wilson, Secretary and Treasurer; Directors, Mr. Leonard Freeman, Mr. W. F. Raven, Mr. Ira O. Johnson, Mr. C. R. Webb, Mr. Henry Rozema.

There also was present from the committee of buttermakers and cheesemakers appointed at the last annual meeting: George W. Sowles, W. W. Thompson.

Meeting called to order by the president. The president and Mr. Raven were appointed as the committee to audit the treasurer's books. They reported that they found them correct. The report was accepted and adopted by the committee.

Representatives from Flint, Saginaw and Detroit appeared and extended an invitation to hold the next meeting in their cities. Motion was made to accept the invitation from the city of Detroit and that the meeting be held on February 1, 2, 3, 4, 1910.

Adopted.

Upon motion the President was appointed to audit the accounts and O. K. the vouchers in accordance with an act of legislature from time to time needed.

Resolved, That auxiliary meetings be held where Dairymen will pledge \$40 to pay the expenses for same or where the dairymen will organize a local Dairymen's Association with 40 members in accordance with the by-laws governing the same. Carried.

Resolved, That the association pay the expenses of the buttermakers committee in attendance at this meeting. Carried.

Resolved, That the secretary extend an invitation to the Ice Cream Association to meet in conjunction at our annual meeting. Carried.

Resolved, That the secretary ask the Agricultural Department to make an exhibition of pure food. Carried.

Resolved, That the Association purchase the Neostyle and supplies of the secretary at cost price. Carried.

Resolved, All money received for advertisements in the annual program book, space in the exhibition hall and from all other sources ex-

cept the annual appropriation be turned in to the promotion account of the Association. Carried.

The matter of publishing the program book was discussed at some length; being unable to decide upon any specific plan to proceed the following resolution was offered:

Resolved, That the publication of the program book be left entirely in the hands of the secretary; and he is hereby authorized to hire such help as may be necessary to do the work, and he is instructed to make a personal solicitation for advertisements at the next National Dairy Show in Milwaukee, to visit Chicago, Detroit and such other places as in his opinion will pay and that the expenses for the same shall be paid from the promotion account. Carried.

Resolved, That the secretary prepare an amendment to the by-laws in relation to the election of officers by Australian ballot during the exhibitors session. Carried.

Resolved, That the matter of securing necessary badges be left to the secretary.

The matter of annual program was fully discussed and it was decided to add two more sessions to the meetings, the opening session to be on Tuesday at 2:30 P. M.

The program was prepared by the buttermakers committee with the assistance of Mr. Webb; was accepted and their request for three sessions of the convention was granted.

The matter of outside speakers and a judge from the New York market were discussed. The secretary was requested to correspond with those mentioned and secure their services if possible.

No further business appearing the meeting adjourned.

S. J. WILSON,  
Secretary.

In accordance with the resolution in relation to obtaining a judge on butter from the New York market, I have obtained the services of Mr. P. H. Keifer.

Owing to the shortage in the State Treasury, we were unable to procure any of our appropriation until after the first of January. In order to mail the Annual Reports and carry on the work, I was obliged to borrow \$150 at the bank. I also made an appeal to the members to pay their annual dues in advance which was responded to by about forty-five. Mr. Helmer Rabild took out a Life Membership at \$10. Owing to our not being able to procure any of our appropriation, we have been unable to hold any auxiliary meetings thus far this year, but we hope to have the usual number of meetings before the end of the year. The last legislature cut our appropriation down from \$500 to \$300. I think this matter should be attended to by the proper officers at the next session of the legislature and have the amount increased to \$1,000 per year.

The book has been published this year with the least expense it ever has been.

I have been unable to make any trips soliciting advertising, so did not obtain as much as heretofore. The total expense in getting out the book has been \$393.65. Total amount of advertisements obtained,

\$709, leaving a net profit of \$315.35 to the Association. A detailed account of vouchers for expenditures with names and amount received for advertising will be submitted to the Board of Directors at the Annual Meeting in accordance with the by-laws, and will be published in the next Annual Report.

This is my eighteenth and last Annual Report as secretary of this Association. My business demands my whole time. I lay down the work with mingled feelings of pleasure and regret—pleasure that I can look back on the eighteen years of gradual growth and advancement in the dairy industry in this state, and especially in the growth of this great organization of which I have been secretary during that time; pleasure that I can now devote my whole time to my own personal affairs.

I regret that I will not have the pleasure of meeting you, my friends, in an official way. I regret that I can not help to make the next meeting a still greater success than any that has been before. This has been my motto, and it is that for which I have constantly worked—to make each meeting better than the previous one.

If my business affairs will permit me to retain the office until the end of the fiscal year, I will try to do so. If not, I will turn it over to my successor at the end of the present quarter. Any assistance, however, that I can give the Association in the future, I shall gladly render.

Respectfully submitted,

S. J. WILSON,  
Secretary.

Chairman: You have heard the report of the secretary, what will you do with it.

A Member: I move that the report be accepted. Carried.

Chairman: We have now come to the papers and addresses on the various subjects to be discussed, and the first on the program is "Some Problems of the Milk Producers," by Dr. G. A. Waterman, of Ann Arbor. Dr. Waterman is too well known by you to need any introduction. Dr. Waterman.

### "SOME PROBLEMS OF THE MILK PRODUCERS."

DR. G. A. WATERMAN, ANN ARBOR.

Mr. Chairman, Ladies and Gentlemen: Before I take up the real talk of the afternoon, I would like to make a few remarks along two lines that appeal to me. The first is that I am glad that I can say, "Ladies and Gentlemen" this afternoon, for as a practical farmer, I believe that we should introduce into our agricultural meetings more of the ladies; bring them with us, and that for two or three reasons: it will interest them, it will get them away from home and give them a change, then, aside from that, it will show them that they have a part in agriculture more than simply washing pots and kettles. And I

want to say that I believe, yes, I know, though not from personal experience but from observation, that a man who does not have a good helpmeet is up against it in agriculture. So, as before stated, I am glad that I can say "Ladies and Gentlemen," and I hope the time is not far distant when the emphasis can be put upon the ladies, so far as numbers are concerned, as well as the men.

Then, there is another thing suggested by the remarks of the President in his address. How are we going to increase the consumption of our dairy products? Did you ever think of the consumers—what do they know about agricultural conditions in our country? Do they get what little they know from the agricultural press? No, for they do not read agricultural papers. They get what little they know from the daily press, and perhaps that knowledge is in the form of an exaggerated report of some Dairy Inspector finding rotten conditions on some dairy farm. The effect upon the readers is to drive them away from the dairy products. You will hardly ever find in the newspapers and account of an up-to-date dairy. It seems to me, ladies and gentlemen, that it should be the duty of somebody in this Michigan Dairymen's Association to see that there is introduced into the daily papers all over the state of Michigan something along the line of what constitutes an up-to-date dairy, how it is run, what the products are like when turned out, and particularly what these up-to-date dairymen are trying to produce in the direction of pure milk. We are not dealing to-day simply for the present, but we want to consider that there is a future; that there are others to follow us, whether they be our boys, or the boys of someone else, when we "shuffle off this mortal coil."

Now I come to the subject proper—"Some problems of the Milk Producers." But while this is the subject that was assigned to me, yet there are so many problems, and of so complex a nature, that the title would hardly give an inkling of what might be said. So I will discuss principally the subject of Sanitary Milk Production.

This sanitation question comes right back to the farmers, because you can not have pure milk unless it is kept clean from the time it starts from the cow right through to the consumer. You must start with cleanliness right in the stable, from just the moment the milk leaves the udder, and you must follow it right along until it is consumed on the table of the consumer. And every man who comes in contact with the milk has something to do in this great sanitary question. We who sit on the stool and milk the cows are the first to handle the problem of sanitary production. We are to look after it at one end, let the house-maid take care of it at the other end.

So this afternoon I am going to talk to the dairymen first. I will bring it down to some simple things, some perhaps that many of you know as well or better than I, and are practicing them right along, but it can do no harm, for somewhere in the Good Book we are exhorted to not become weary in listening to that which we already know, as it will tend to "establish" us. And that is what we all want, to know the right thing to do, and then become established in it. Perhaps there are better ways and methods than I may suggest so that I may be relegated to the rear as a back number; if so do not hesitate to call me down.



There are certain things that are essential in the production of pure milk. First of all, you must have a healthy cow. That goes without saying. Second, you must have a sanitary and clean stable. Cleanliness does not always mean expensiveness. A man may not have a very expensive outfit in order to produce clean milk, but he must have apparatus and stable so that the cow can be kept clean. He must have a clean cow. I don't care where you keep her or how you tie her, or anything about it, but keep her clean. You must do this if you want to produce clean milk.

The question of what kind of a tie we should use, I will pass over, because we have different notions. Then, there is the lighting and the ventilation of the stable, important as they are, I will not discuss them, simply because more is said about these things than the ones I wish to talk on this afternoon. So please do not think for a moment that I place no weight on these matters—the tying, the ventilation and the light.

Every bit of stable filth must be kept off of the cow. The men who go into the stables to milk the cows must keep the milk pure while drawing it if we are to have sanitary milk. Now, in order to do this, the cow must be so arranged that she will not get any filth on her so far as possible. Then, clip the cow's udder every fall—make a good thorough job of it. And right here I would like to just see an expression by your hands of those who make a practice of clipping their cows' udders every fall soon after they are housed? (A few hands were raised.) Now this is a long step towards sanitary milk. You leave that hair on the udders, and they will accumulate twice or three times, yes, a dozen times, as much dirt as they would accumulate if the hair was short. And then you have just that much more dirt to remove or get it into the pail.

When we come to talk about the production of sanitary milk, the question of dollars and cents will come up, and we must consider the dollars and cents side of it. The public has no right to demand of us that we should put more money into the production of their milk than they are willing to pay us. On the other hand, it seems to me that they have a right to demand of us that we shall give them just the very best product we can as regards purity, cleanliness, etc., and still make a fairly decent and respectable profit on it. When I go into a store, I have a right to demand of the merchant that he shall sell me an honest pair of shoes. On the other hand, I have no right to expect him to sell me a \$5 pair of shoes for \$3.50. The problem up to us all the time is, how can we keep this milk in the best sanitary condition price considered? I am not talking about certified milk—the public does not use certified milk—the great problem we have to do with is commercial milk.

Now, let us put this on a money basis, for it is money that talks. What does it cost to clip a cow's udder? I will put this argument on the basis of twenty cows, as it is that number that we have, and it is with this number that I have had experience. What does it cost for a man to go into a stable and clip these cows? A man's time on a farm is worth, say \$2 a day, and he can do this in a day. Think what your cows produce in a year—then don't you see that it will add only an infinitesimally small amount to your cost of production. And since this

is so, I say that the public has a right to demand of us that we clip our cows' udders.

Then there is another thing, the grooming of the cows, and this should be done daily. And should be done thoroughly, all over the udder, along the belly, the sides, tail, etc. I will ask you to be honest—of those here who make a practice of grooming your cows every day—hands up! (Hands raised quite generously). That is good. I wish, however, that we might have a city audience here to see this expression, and then I would like it if every man before me would put up his hand. If we could do that there would be a good deal more milk used in a short time than there is at present.

Now, what does it cost to groom cows? Can we afford to groom our cows for the price at which the consumer will pay for our milk? Take as a basis these twenty cows I speak of—they can all be gone over and groomed by one man in one-half hour. I know some of you will say that this cannot be done, but it can be done, for we have done it.

A Voice: I think that two dollars for clipping twenty cows is too small a price; I don't think it can be done for that amount.

Dr. Waterman: You can do an excellent job in one day, and a farm hand is worth about two dollars a day.

A member: I think that the clipping of twenty cows in one day will have to be clipped a little if a man gets through in that time.

Dr. Waterman: It can be done just the same, and done well, for I have done it.

A member: I would like to know a little more about cleaning and grooming of these twenty cows. I don't believe a very satisfactory job can be done in less than two hours.

The Chairman: I think the ordinary man would take considerable more time.

A member: I think the chairman is right. I let my man spend two hours currying five cows.

Dr. Waterman: That's right, if you don't believe it, say so. I am glad that you are coming at me. It may be that all of you don't have a good man as we do.

A member: I will admit this fact, if cows are cleaned every day the job can be done in a much shorter time than if this is done only periodically.

Dr. Waterman: Of course, if a man wants to, he can curry a cow for an hour or two, but there is not time usually to do so much, and one has to be governed by his circumstances, but a half hour on twenty cows is better than nothing. I can go over twenty cows in a half hour and do a pretty good job and I have done it more than once; and more than that, our men are doing the same thing every day. They are willing to do it. They go over these cows from shoulder to heels, back, bellies and sides and tails in that length of time.

A member: What kind of a brush do you use?

Dr. Waterman: O, just an ordinary horse brush.

A member: What kind of a clipper do you use?

Dr. Waterman: You don't seem to take very kindly to the time I suggested in which these cows can be clipped. Now, I can take a power clipper and a boy, and can clip twenty udders, and do a firstclass job,

going all over the udders and running out on the milk veins and blanks—in short do a firstclass job and clip twenty cows in half a day. You can charge five dollars for it if you want to, and if it sounds better to put in the newspaper, but I count my time on the farm at one dollar for half a day, and there you have it.

A voice: Perhaps that can be done by the Doctor, but we can't get it done in our parts.

A member: I would like to see that done, then I would have more faith in it.

Dr. Waterman: This is the first time I have ever stirred up enough enthusiasm so that anybody would kick back. I hope the next subject that is taken up will get as much kicking as this one has.

A voice: Perhaps you have a better audience now than you ever had before.

Dr. Waterman: I have been used to talking to boys and you know they think a lot, but they don't say much.

Now, I want to take up another part of this question and that is the washing of the cow's udder before milking. I want to ask again, that all of you who make a practice of washing the udders morning and night, raise your hands. (Good show of hands). I am glad the hands go up so freely, but still there are not so many as there ought to be. Ladies and gentlemen, it is just like this with me, and perhaps it is some such way with you, I cannot make a big jump all at once. I must get into the thing gradually. We started out first by clipping the udders. That was not so very much. Then the next thing, we began grooming the cows and in time, we found that grooming did not take up so much time as at first we thought it would, and when we once get into the habit of it, the work goes along steadily. After that we introduced the matter of washing off the udders. As farmers we have so many things pressing upon us, that it is a rather difficult thing to swing out of an old beaten path into new innovations all at once. We must not spend two hours grooming five cows, that would not be economy; but we can spend a minute or a minute and a half on a cow and when we get our enthusiasm up to the point where we appreciate what it means, and see the benefit there is in it, and realize that there is a real profit that comes from this extra care, we will have no trouble in doing it, and will do it willingly.

A member: How long does it take you to wash your cows' udders?

Dr. Waterman: We do it in a rather short space of time. Perhaps you will say we do not half wash them. I will not dispute that, but what we do do, is better than nothing. I have timed our boys when they did not know I was timing them and they do the work very well. A man can wash the twenty udders of our cows, and do a fairly decent job with a cloth and pail of clean water in fifteen minutes, get his water emptied, and cloth washed out and hung up; and twice a day you see it takes but half an hour for the job. Now have you got any kick coming on that?

A voice: Perhaps you have got a smart lot of boys.

A member: That is better than grooming.

A voice: I don't think you can do very much of a job of washing in that time.

Dr. Waterman: Of course, these cows' udders are clipped, and are not covered with filth. You can not wash off an udder that is covered with hair three inches long in as short a time as where it is clipped.

A voice: Perhaps you can do it but we can not get that kind of work done with us.

Dr. Waterman: I am going back now and figure up the cost of this work, for it is the cost of the thing that we are interested in. Twenty cows put on an ordinary basis, will produce four hundred pounds of milk a day; that is, 7,000-pound cows will do this. We should figure on at least a 7,000-pound cow, for we ought not to have any less in our herd. You can put as much work as you have a mind to on a poor cow, and you will not make anything. You must have the foundation stock to work on if you want to get results. As for myself, I would feel somewhat ashamed to have less than 7,000-pound cows in our herd.

Now for the cost. A half hour a day at 24 cents an hour makes 12 cents; that is, it costs you 12 cents a day to wash these cows. You have 400 pounds of milk on which you have increased your cost of production, 12 cents. How much is that per quart? One cent for every 16 quarts. Then there is one cent added to your cost of production before grooming, making two cents for washing the udders and grooming for each 16 quarts that you produce, or one cent for every eight quarts, or one-eighth of a cent for each quart that you produce. In this way you see we have increased the cost of production one-eighth of a cent for each quart. You can see that it is not very expensive. While I have no absolute statistics to prove what I say, yet I firmly believe that by this extra care, we add very materially to the cleanliness of our milk and also help to increase the yield, so that, in fact, the cows themselves pay for a part of this extra expense in an increased flow of milk.

I could go on discussing a good many other points that might be of interest, such as the covered or open pail; taking milk into a milk room; running it through the separator; or the keeping of the separator clean—a thousand and one little details, all have to do with the production of sanitary milk, but I leave them all out, for I want to get at what I think to be the basis of clean milk, and that is, gathering it in such a way that no dirt will get into it. You know as well as I that we cannot get dirt out of the milk after it is once in there. So we must start at the beginning of the milk production, when it comes from the cow's teats, if we want to produce milk that is really sanitary. These three points that I have taken up I consider vital ones.

After the cow is ready to milk, there must be clean hands and clean clothes. There is nothing that requires greater attention to details than the production of clean milk. We do a lot of things in this world that we do not get returns for, but we do them because of the satisfaction it gives us. Then there is that old saying. "In time of peace prepare for war." So it is up to the dairyman in this time of prosperity to prepare for the time when milk will be a drug in the market; and then when a better product is put on the market men will consume more and pay a better price for it.

Now there is another thing that I want to touch upon in connection with this extra cost of production. I hinted at it before, and that is,

can we charge all these things to the cost of production? As far as I am personally concerned, I don't think we should do so. In my judgment cows will produce enough more to pay for a part of this extra expense. "Figure it out for me," you say. I cannot figure it out, but I am confident that they will, if groomed, give a quarter of a pound increase at each milking. You receive a dollar and a half a hundred. If I am right in this you see that this increase will amply pay for the grooming. Of course you cannot tell positively whether the increase all comes from the grooming or not, but if it does come it is because the cow feels good; and when the old cow is feeling good the better she will do for you. That little time of thirty minutes on twenty cows will help them to feel better and they will repay by an increased yield.

When it comes to washing of the udder, I do not know whether they pay for that or not. But I will pay for that myself, because I enjoy milking those clean teats that much more. It is enough more pleasure to me to milk teats that have been washed twice a day to warrant this slight expense. These are some things that we can do that we need not charge up to the consumer. We must, however, charge up to him our plant, and all the regular expenses of our dairy. And I wish to repeat that the consumer has the right to demand of us that we put on the market the very best milk as regards richness, cleanliness, etc., that it is possible for us to do and still have a respectable profit to ourselves, considering the price that he is willing to pay for the product. I hope that we can have a free discussion of this question and especially from the farm end for that is the practical side of it.

#### DISCUSSION.

C. E. Hartsell, Troy: I have understood that in disturbing a cow's udder in the least, it will make her give down her milk prematurely. Could not that udder be brushed? And do you go around and wash all the udders before milking, or do you do it just as you milk.

Dr. Waterman: I don't know whether our method is the best or not, but our practice is to wash all the udders before we start milking. We figured it out that we could do it better that way than any other way. If there is some other method that is preferable I would like to know of it.

Mr. Harris: A cow's udder disturbed, as the speaker before suggested, will make her give down her milk so that there will often be a puddle on the floor before you can get around to milk her.

The Chairman I saw a definition of a farmer not long ago and it was that he was preeminently a man hunting for trouble. Evidently from this discussion there are some farmers in this room, but it is discussions of this character that helps to bring out facts and figures and so the more we have of it the better. The gentleman selected to open the discussion of the address of Dr. Waterman is Mr. George A. True, and we will now hear from him, if he is present.

Mr. True: I was thinking when Dr. Waterman was talking, of the Yankee, who said, "You can have this for two hundred dollars; what will you give?" Dr. Waterman has asked us to clip and curry and even wash our cows. He is a Waterman and of course he can do it easier than some of us. The question is not what we used to do, or what we

would like to do, but what we must do now under the existing circumstances. I am in sympathy with the effort to get a better grade of milk. Many of us have not appreciated what this really means to the dairy farmer. The curse of the dairy business is dirt; and just in proportion as we keep our cows clean we get good milk, because keeping the cows clean, is keeping the milk clean. And do you know that one of the things that makes for good milk and good farmers is to have your business in such shape that your men can keep clean. One of the things that is driving the boys away from the farm today is lack of cleanliness, so that where ever he goes the odor that accompanies him reveals where he has come from. This could be obviated if care was taken to have the farm premises in a better and more cleanly condition. You have seen in the business man's office a card on which are printed these words, "If you do not do anything that you don't get paid for, you won't get paid for anything you don't do." So the dairyman who does a little bit more than his neighbors do and a little bit more than is absolutely necessary to meet existing conditions, soon gets the reputation of doing more than he actually does. The man who is slack and slovenly, who fails to tend to little things, his reputation is soon known, and the Bible maxim will come true that, "He that hath, to him shall be given, and from him that hath not, shall be taken that which he hath." Farmers generally don't think that they can have their men clothed in white suits. There are comparatively few who do this, but there is a compromise. I have heard one of the most eminent dairymen of the state say that he could not have his milkers dressed in clean suits on account of the washing. It is not a question of getting the suits, but of keeping them clean. There is a method that I have tried, a half-way measure, and it seems to work all right. Our milkers are all furnished with big aprons with sleeves, that come down over their clothes, and while they are not quite as good as a complete change of clothing, they are put on over the work clothes, it is a quick way to make the change and I have no trouble in getting the wives of the milkers to do the washing of these aprons. When the matter is mentioned, I tell them that dirt on these aprons does not get on their clothes, and that is one of the things that helps to keep the milk clean.

I was wishing to ask a question or two; have you had any trouble with cow's teats chapping from washing in cold water?

Dr. Waterman: Personally I have not. We keep our stables quite warm. I think there might be some question if we washed in a cold stable, and perhaps in such places it would not be the right thing to do, but under our circumstances we think it is all right. I have not heard that complaint made and so cannot answer the question because I have not had any experience.

Mr. True: Well, I do not think there is anything more that I can add to this. The Doctor has covered the ground nicely. When we see the improvement that we can make, I think it is our duty to try it out, and I believe we will discover that a lot of them are not as much trouble as we had thought. If the dairymen of Michigan are to get the good reward that they are looking for, it must come, not from being afraid of doing something that they are not going to be paid for, but doing a little better than someone else, better than you are getting paid for,

and the result will be that you will in the end be amply paid for your extra trouble and expense.

A member: In washing the udders, at what temperature do you have the water?

Dr. Waterman: As to the temperature I think the water should be comfortable to the hand of the washer. Some have it warmer than others.

Question: I would like to ask whether you would advise having a cement floor for the cows to lie on and whether it is conducive to garget?

Dr. Waterman: As to the cement floor I personally think it is the best floor there is, and as far as garget is concerned I do not think that cement floors or washing of the udders has anything to do with producing the disease.

Mr. Wilson: I have had some little experience in washing cow's udders. When I first came to Caro and went onto a dairy farm and began peddling milk, the gentlemen who had the dairy before we took it only wiped off the teats with a dry cloth. When the milk was bottled, if you should hold it up to the light, you could see the dirt in the milk. We washed each udder just as we began milking, and since then we have not found any dirt in our bottles. We have found, however, that if we washed all the udders of fifteen or twenty cows before beginning to milk some of the cows were liable to lie down before we got to milk them.

Dr. Waterman: Perhaps our methods are not right. We feed silage before we milk and so the cows seldom lie down before being milked. Now I know I will get jumped upon, but I don't care. If there is any better way I would like to find it out.

Mr. Wilson: After we did that we could not find any dirt at all. I presume we do not take as good care of our cows as we should, but we have a pretty good quality of commercial milk.

The Chairman: I know that we do not take as good care of our cows as we should. I was surprised, however, to learn that Mr. Wilson would have milk that we could see anything in. (Laughter).

Mr. Lawson: In the summer time we do as the Doctor says, feed ensilage in the evening, but in the morning we do not do so. It is a question of convenience with us. We have not been seriously injured by it, but in the summer we wash all of the cows just as he does. This time we wash with water as hot as the hand will bear. We have boys in the stable, and we start in and wash the cows and immediately begin milking, and they usually keep about one cow ahead of the milkers. This just about keeps the cow in a condition so that milk will be ready to come down when you begin to milk. We have had no injury from chapping of teats.

Mr. Augevine: I have used a covered pail for a long time and I am persuaded that a covered pail is far better than milking in an open pail.

Question: How do you use it?

Mr. Augevine: I use it just the same as any covered pail is used. There is a hood that comes over the hole of the pail and we milk in that.

Question: Do you use cheese-cloth?

Mr. Augevine: No, I do not think that a cloth or cotton batting is any good.

Mr. Hatch: We have been using a covered pail since April. We used absorbent cotton and cloths and found no trouble. This cloth and absorbent cotton should be changed frequently enough. We do not think we should milk all day in the same pail without change of cotton.

Mr. Vandenboom: I intended to use the Gurler pail but after having conversation with Dr. Marshall I concluded that we could get along just as well without it, and so we use an open pail and don't use either cheese cloth or absorbent cotton.

Dr. Waterman: I hold in my hand a little bulletin published at Storrs, Conn. on this subject and giving results of an experiment on their college farm along this line. The milk was taken to the laboratory and tested for bacteria. I think that you would find this little pamphlet a valuable addition to your library and they will no doubt be glad to send it to you if it is in print. The bulletin is No. 48.

Dr. Niles: Two weeks ago we had a very up-to-date dairy in connection with our institution, but it burned to the ground, and I may say that my chief object here is to get the best up-to-date ideas for rebuilding our barn. We tried to keep it clean in every respect. We didn't wash the cows' udders, however, but the cattle were all groomed very carefully before milking each time. The stables were kept very clean and free from dust and cobwebs, etc. We used just an ordinary pail. We do not attempt to produce certified milk but I fancy that our milk comes pretty near to being pure and right.

Question: Do the students milk your cows?

Dr. Niles: No, though they formerly did, but we found that it was impossible to get them to do the milking thoroughly and well. The cows began to shrink in their milk and we thought it was economy to employ sufficiently reliable experienced men, and let each man milk his own cows. I think it has much to do in lengthening the period of lactation.

The Chairman: I have seen that barn that Dr. Niles says has just been destroyed by fire, and it was one of the best in the state. I had not heard before that the Doctor had lost his barn. He is in charge as you know of the School for the Deaf at Flint.

Mr. Wiard: I would like to ask in connection with the question of sanitary milk whether it would be a good plan to take the cows and milk them in a separate clean stable?

The Chairman: I know that Mr. Johnson does, but I do not see how this could be done as a practical matter for general use.

Dr. Waterman: I want to keep before you that this is not a question of producing certified milk that we want to discuss here today; it is the commercial milk that the people use in our cities, and it is this that we want to raise the standard of.

The Chairman: It is not supposed that the women cannot speak to these questions; and right here I want to say if there are any of the ladies who can give us any pointers on these questions that are asked, we would be very glad to hear from them.

Mr. Barnbret (?): Allusion has been made to a very valuable bulletin, and would urge that everybody send for it. There are two or



three figures in it that are very impressive, and I think would be well to get into the records of this meeting. They went into a dirty barn and with an open top pail and their milk showed as high as nine million bacteria to every cubic centimeter of that milk, the lowest number on any day for the open pail being 115,000 bacteria per cubic centimeter, and the average was over 3,000,000. The other conditions being the same but using a small top pail, the milk showed only one hundred thousand bacteria to each cubic centimeter, or only three per cent of the number found in the milk in an open pail. Then improving the conditions brought it down to forty-two thousand for each cubic centimeter; and then with a small top pail, they got but six thousand bacteria to each cubic centimeter. These figures show what was done by using a small top pail.

Question: Was there any report made on the cheese cloth?

Mr. B.: There were some experiments along that line but I do not have them in my mind. The question was raised by the washing of the cows' udders, and it was shown that wiping the cows' udders off, done just before milking, increased the dirt rather than decreased it. You know that many farmers will sit down and stir up a lot of dirt by rubbing the udders of the cow, and then before the dust and solid particles are settled, they sit down and begin milking. It would really be better not to do anything than to do it in that way.

A member: I am sure that we will greatly increase the number of bacteria if we do it this way. The principle is here, that bacteria cannot leave a damp surface. Do not forget that point.

The Chairman: I have seen milkers with hands so moist from milking that no bacteria could leave them. (Laughter).

A member: A few moments ago it was asked whether milk cows ought to be taken into a separate room to be milked. Do you consider that better?

Mr. Johnson: It certainly reduced the number of bacteria. In the room where there was no dust the number of bacteria was reduced about three hundred per cent from milk that was drawn from the cow in the ordinary way in the stable.

Dr. Waterman: I would like to ask whether it is a feasible proposition, and whether a man can afford this extra room from a business standpoint?

Mr. Johnson: No sir, I don't think that it would pay the ordinary dairyman to try to do it.

A voice: Couldn't part of this expense be made by taking only a half minute to groom and wash the cows?

Dr. Waterman: There, rub it in! Rub it in, if you want to.

Mr. Johnson: It doubles the cost of milking unless you have room enough to drive in a small herd of cows, say twenty-five, a room where there is no dust, no bedding, etc. Of course you cannot afford to do it at the ordinary price of milk.

The Chairman: I want to say that there is a man who lives up in the northern peninsula who is receiving ten cents per quart for his milk. If he is here today I am sure he would be glad to tell us what it costs to produce good milk, and whether at this price it is a paying proposition or not.

Mr. Vanderboom: I did not suppose that I would be called upon this afternoon, but since the question is brought up as to the cost of producing the milk, I am glad to tell what little I know about it. We are way up north where the price of every thing is high; where the winters are long, the summers short, and the pastures scarce. If a man is going to do anything in the way of producing sanitary milk, he must get his price for it and get plenty of business. We have been producing milk for thirty-five years. Way back when there was not so much demand for the milk to be produced in so sanitary a manner we made money. Up to the first of January we were selling milk at eight cents but since that time we have been getting ten cents a quart. With all the improvements that are necessary to keep up with the demands of the city people, there is really no money in the business, because the cost of production is so largely increased that it leaves the milking-man working for the consumer and not for the dairyman. (Applause).

Dr. Waterman: I am glad to know this gentleman. I would like to ask him a question or two. You said you got eight cents before and up to the first of January. Now, getting at the price of it, can you not put the extra work over and above what you put on your cows before for two cents a quart? I say, I believe you can.

Mr. Vanderboom: We don't figure that we can. The cost of feed is increased one hundred per cent, and milk should bring sixteen cents per quart now in proportion to the increased cost of food.

Dr. Waterman: What I am trying to get at is the labor problem. Now if a man is milking four hundred pounds, I tell you that four dollars will do a lot towards meeting that extra cost.

Dr. Vanderboom: The Doctor has failed to mention the most expensive part. Where we must aerate, and cool, and bottle, and deliver in wagons in such bulk that you cannot carry more than about half as much as you could ordinarily, and also the cost of the loss of bottles which the customers break, other milkmen steal, you lose, etc.,—I say who pays for all the cost? All this cost is extra as compared with what it used to be. And again, I ask, who is going to pay for it? You have got to get a much better price than formerly or else there is a loss.

Dr. Waterman: You misunderstand me. What I am trying to get before you, the point I am trying to make and emphasize is, that you can afford to put on the little extra work necessary to produce a better grade of milk for the extra amount you receive for it. In other words, I want to show you that the little improvement necessary to produce it will be amply paid for by the increased price paid by the consumer.

A member: That is how I got into the deal and I have not been able to get out of the business what I thought I should have.

Dr. Waterman: Then get out of the business, if it costs more than you receive, or more than the consumers are willing to pay.

Mr. Dunway: I would like to ask the gentleman from the upper peninsula whether or not his neighbor who is producing milk is making any more money out of the business today?

Answer: Yes, I think he is but he is not taking the care and producing the quality of milk from a sanitary standpoint that we are.

Dr. Waterman: The matter of cleaning the cows is a real satisfaction to the owner; I know for, I have had experience. The increased pleas-

ure of seeing a row of cows cleaned, free from dust and dirt at milking time, pays in satisfaction for the extra work. And even though it does require more work, which costs something, I think it pays even if we do not get any better prices.

Chairman: There is a man who has a reputation extending over the whole state. He has a reputation for having a milk product that is clean and right and he is making success of the business, Mr. H. N. Wattles, of Troy, he will now speak on the subject.

### WHAT THE PUBLIC EXPECTS OF THE PRODUCER AND THE REMUNERATION HE RECEIVES FOR IT.

MR. H. B. WATTLES, TROY.

Mr. Chairman, Ladies and Gentlemen: I think it would have been better if you could have secured a more educated man, one able to give you a nice flowery talk. I am not that one and what little I shall say will be along the line of the discussion order. I do not claim to produce certified milk but my milk tests according to the law and would right along.

The producer is expected by the customer to give a No. 1 article. You must do it in a sanitary barn. It cannot be produced in an ordinary stable. The old fashioned barns, with their overlofts and their cobwebs, were not sanitary. We want as much light and as many windows as we have here. You must have the sides of the barns sealed so that you can wash it down. You don't want any of these cow-pen stalls to collect dust. Dust will carry the germs. They cannot hang in space. The barn is one of the main things, and one of the first things necessary to secure sanitary milk. The barn must be cleaned every day, but don't go out in that barn and commence cleaning before you begin milking. Be as quiet as you can in that barn. Do not clean after half past two in the afternoon.

As far as clipping cow's udders is concerned it does not amount to a snap of your finger, gentlemen. You want to have those udders clean. I find that as a rule a good cow does not have much hair on her udder to have clipped; of course I have Jerseys. Dirt will stick to the back of my hand and it will stick to a cow's udder just the same whether they are clipped or not. You must groom cows and no man can groom twenty cows a day and do it as it ought to be done in half an hour.

My wife figured up this morning that we have been in the milk business for seventeen years and have sold 412,000 gallons of milk, so it would naturally seem that I ought to know a little about producing a clean article. I say groom your cows and groom them well; clean them. Go over your cows and wash their under parts, down their legs, their tails, in fact all parts that have dirt or dust that would be liable to drop into the pail, and do this in the forenoon. Then just before you get ready to milk go to the stable and spray the floor and the udders of

the cows, with a very fine sponge. Do not wash the udder just before you milk. It would be all right to wipe off the udder with a damp cloth.

When milking the cows it pays to be clean, but there are none of you gentlemen here that are fit to sit down to milk my cows. My milkers all wear clean white suits, any color will do but white looks nicer. As soon as you milk a cow even if the barn may be as clean as your kitchen, take the cow's milk right into your milk room. It don't do much good to strain milk if dirt once gets into it. The thing to do is to keep the dirt out, and if it once gets into the milk there is no machine made that will take it out again so keep the dirt out of the milk in the first place.

One reason why this milk-producing costs so much in keeping these dairies in sanitary condition is the help. The help that we are able to get is so costly now days, and do so little work that it makes it very expensive indeed. I didn't think the extra work required to produce what is known as sanitary milk pays. A man could make more money selling milk at twelve cents a gallon a few years ago than he can now at twenty cents. Another thing, these automobile factories have taken all the help out of the country; you go past a factory and you see a sign on the door, "Help wanted, nine hours a day, and we close on Saturday at one o'clock." Did you ever hear of a dairy that could close at one o'clock? We have just as much to do on Saturday afternoon and indeed on Sunday as any day, and the attraction of working in an automobile factory at good wages and short hours is so draining the country districts of help that we have been able to get heretofore, that now we cannot find competent help.

Then again the question of help in the house is a serious problem. The girls that are worth anything can go to the city and engage as domestics in families where there are no more than one or two children, perhaps one, and get their five or six and even seven dollars a week and don't have to work more than half the time. It is almost impossible to get a girl to work in the country even though we pay the biggest kind of prices. I have as good a little wife as ever wore a shoe, that is doing the work alone. We cannot get help even at five or six dollars a week. She is doing the work that two or three women ought to, cooking, baking, cleaning and helping to care for the milk. She has to keep everything up in order, for that is demanded of her. All this extra work to keep clean cost something, and when the consumer tells us that it don't cost anything to keep clean, I want to tell you it does, costs every minute.

Now for all our work what do we receive for it? We are not receiving what we should. Milk has not advanced in price with the price of labor and feed. You go to most any institute or convention and these institute workers will tell you that you must have your scales and your tally sheets and your tester and weigh out the milk just as soon as it comes from the cows, but I tell you gentlemen, that if all the milk that was actually weighed out and dealt with in this manner was all that could be supplied to the public you would not get enough milk in Detroit to make a milk punch. They expect a No. 1 article. That article starts in the cow barn. That cow barn is just the same as the dairy house. There is the supper and the breakfast to get for the animals and it should be just as clean as the kitchen, and it must be so if we

secure a requisite quality of milk to meet the demands of the public. You know it would be a pretty unsatisfactory house wife who would get breakfast with her hair all over her shoulders. So the man, who goes to milking should not take any less care of himself. I noticed last week that it took fifteen minutes for my men to wash up and put on their milking suits. There are four of them, so you see that that meant one hour's work. We have expert labor on the dairy farm as well as in the city and this kind of help cannot be had for a song, it costs something.

Another thing, all you people want to keep your cotton batting and rags off the top of your pail if you want to get good milk. I won first at Battle Creek last year, and I got second on cream in Grand Rapids right in the face of so many dealers that make loud claims for pure milk. I think, perhaps, this is all I need to say. I am not practiced in public speaking, I am only a plain, simple, practical dairyman, but we are able to get a product that meets the demand of the public, and we are selling all we can produce to the Walker-Gordon Co. who put the finest milk on the market that there is produced.

The Chairman: Mr. Wattles has a model dairy, it is clean and the people that do the work clean up. Indeed there is a story going around that these white suits were kept so very white that Harry never used them. But I believe he does.

This idea cotton batting—absorbent cotton—I would like to call on Mr. Probert and inquire whether he thinks the use of absorbent cotton over pails is the proper thing.

Mr. Probert: Mr. Chairman, I have stepped into the hall and I don't know has been going on except the few remarks that Mr. Wattles has made in regard to the sanitary pail.

Dr. Waterman: Mr. Probert, did you ever go to a county fair and there see a man with his head through a sheet and the fellows outside of the ring try to hit him with balls,—that is what we have been doing—I furnished the head.

Mr. Probert—(continued)—I don't care who the man is or what practice he follows he could not produce for me sanitary milk or certified milk or any first class milk without a covered milk pail. As a proof of that I will submit my sample of milk every day of the year with any man, I do not care where it is, who produces milk in an open pail. For two or three years I have produced certified milk. I have used sterilized or absorbent cotton that costs ten or fifteen cents per pound—and that is more of your expense in the production of clean milk.

Our cows are taken better care of than our horses. The men are kept as clean as they can be kept. The men are never permitted to sit down to milk without first washing thoroughly. We have wash bowls on each side of the barn. Every man in the barn is required to wash several times during the milking period. No cow is set down to unless she is perfectly clean. Her udder is wiped off. We do not wash the udders. We keep them clean with a damp cloth so that there is no dust on the udder. It seems to me this will help this gentlemen out. We use the covered milk pails so that if there is any dust which falls onto these pails or onto these napkins, it shows very plainly. There is a fine body dust which is soluble in milk and when it falls in your milk pail it dissolves, and you never can get it out. You simply deal it out to your

customers at so much per quart. Our absorbent cotton and napkins will gather that dirt if any happens to fall on there, and it is very often that we will find on that thickness of absorbent cotton, dust deposited on there. You may not find much of it, but it is there, and if you don't stop it there it would be in your milk, and then you would never be able to stop it. It is that very article which will knock your milk, and my milk, when it comes to be examined for bacteria. I have never hesitated to send my milk to the chemist for examination. Your chemist comes around in four or five days and tells you that there are so many billion germs in your milk. The milk was shipped but yesterday so how did these germs get there. There is but one way, that is in the dirt that got in there during the milking process.

We cannot be too clean in the production of milk, and if there is anything that is a safeguard to clean milk, it is a small-top covered milk pail. I could go into this in detail and broaden out on it, but I do not know that that is necessary. All I want to do here is to speak in behalf of, and to protect, that covered milk pail. There is another thing, a great deal of care is necessary in keeping the utensils and pails, and napkins in proper condition. Some people use these napkins, taking them right off the bolt that they buy, and use direct from that. We never do that. Ours are always sterilized, in my home every time they are used, or re-used, or when they are new. My home takes care of that. It is not left to the man in the creamery or on the farm; perhaps we get as fine a product as is turned out in the country anywhere. If we did not take these precautions, I could not produce the clean milk that I do. The expenses, the cost and trouble of doing it is probably the most delicate work we have. Many men call it a nuisance, but I don't call it such, and believe it is necessary for the production of certified milk, and if I didn't have these conveniences, I don't believe I could produce the certified milk that I do, and satisfy my customers as I do.

The Chairman: Mr. J. A. Lawson of Deerfield, is on the program to open the discussion of Mr. Wattles' paper. Is he present?

Mr. Forsythe: I would like to say, before you open this discussion, that I drifted in here and have taken a great interest in what has been said. From what I heard of Mr. Wattles' talk I believe that a resolution ought to be passed, or at least, a recommendation made, that the President recommend Dairy Subsidies, instead of Ship Subsidies. (Laughter).

The Chairman: That shows what a man will say when he is not in the dairy business. We will now hear from Mr. Lawson.

#### DISCUSSION.

Mr. Chairman, Ladies and Gentlemen: I thought a little while ago while the band was playing that this was a pretty hard proposition, and that I was being put up here to try to beat the band, but I see it has just stopped and I will do the best I can. I am more used to talking to a Sunday School class than I am to an audience like this and if I get some of this kind of talk mixed up with the milk proposition you will understand the reason.

## WHAT THE PUBLIC EXPECTS OF THE PRODUCER.

I would say first that he expects honesty. I don't believe that he always has got it; indeed I am certain that he has not always received honesty with the product that has been dealt out to him.

Now I will tell you a few little stories occasionally because I can illustrate better that way. The first story is this: In one of the colleges a short time ago a professor was dwelling at length to the students upon bugs and insects. The professor was a very learned man and prided himself on being able to tell the name of any kind of strange insect, so the boys thought they would test his ability in this direction, and if possible trick him. They got a large bug and stripped it of its legs and its wings and then substituted in a very nice way the legs and wings and antennae from other insects and did the work in so nice a manner that the unobserving eye would not have detected the fraud. In all seriousness, and with sober faces the strange bug was brought in to the professor for his examination. He adjusted his spectacles, examined it carefully then looking up at the boys said, "Gentlemen, I can tell you the name of this bug—it is not a strange one, it is a humbug."

Now gentlemen, the consumers have been humbugged to such an extent in the past years, and are being humbugged at the present time to such an extent that it is a fight for us people who wish to produce a good honest milk—I say we have to fight to make the consumer believe that it is what we claim and that it is not a humbug. In the past and at the present time milk has been adulterated by water and by chalk; it has been skimmed, and it has had formaldehyde placed in it to preserve it, now is not that a humbug? Certainly it is. I want to say to you that one of the things that the producer is expecting, and should have, is honest milk, and I believe that honest men can be in the Milk Men's Association and in the dairy industry just as well as anywhere else.

Another story: It seems that Hans and Shon came to a country town and it being Sunday, they wandered about and finally went through the cemetery. They were looking at the tombstones and epitaphs, when Hans spoke up, "Why Shon! Just look here! Here vas two men in one grave." "How do you make that out," said Shon. "Just see, it says, 'Here vas Samuel Smidt dead, an honest man'—two of them in one place."

I honestly believe that a dairyman and an honest man can live the same life while in his body. The fact of producing honest milk, pure milk, you have discussed before; and I believe that you have had the substance of it. If you will take clean stables, clean cows—I want to indorse Dr. Waterman in most all he says—it doesn't require that expensive factor to enter into the production of good milk. You must, however, have some essentials. You must have clean cows. We bed heavily, and that is one reason why we get good results. I don't care whether you have a fine dairy equipment or not, the cow cannot sense that. The cow can be just as happy in a log barn as she can in the most modern up-to-date structure that can be found on any dairy farm. What you want to do is to give the cow the very best conditions possible under the circumstances in which you are placed.

I want to lay a good deal of stress upon the dairy utensils. We have been successful in getting rid of every drop that we can produce. I do not make any restrictions. I believe that all dairy utensils, including the pail, cans, coolers, bottles, caps, and everything that comes in contact with the milk in any way must be thoroughly washed and sterilized, and that under forty pound pressure, and then left there until they are ready to use. If you take them out after sterilizing and they are exposed so that they can become infected you have lost your work.

A gentlemen one day was walking down the street and was convinced that the people were working for various things, so he thought he would inquire what the opinion of some of the people was in regard to the real object for which they were working and what was the motive that caused some people to do certain things. He went down by a large store building that was being erected; he saw a number of men working there and approaching a fine looking young fellow, quite well dressed, and evidently commanding quite a good position, and he said to him, "My young friend, what are you working for?" The laconic reply was, "\$4.00 a day." He went along and saw an Irishman, Pat, that was raising a big hod of brick to his shoulder and was just ready to ascend the ladder. "Pardon me, my friend," he said, "But what are you working for?" "Faith, sure, I don't mind telling you,—I am working to build that building." One man was working for four dollars a day; but the man that worked to build that building will have a good deal more of an incentive than he that simply worked for the \$4.00 a day that he receives. And so in the milk industry, "Pat's" kind of a man is the kind that is needed, for they will work to build up the industry; will see that their customers get nice milk, and the result will be that their efforts will be crowned with far greater success than if they simply worked for \$4.00 per day.

Another story: One day the door bell of the parsonage rang. The minister came to the door and there stood a young man and a lady outside. They were asked to come in and upon inquiry it developed that they were there to get married. "We can do it all right," said the parson. They came in and the knot was tied. Presently the young man said, "What is your bill, Parson?" The clergyman replied, "\$5.00." "What, \$5.00? Didn't you just marry Mr. So and So for one dollar?" "Yes, I did, but that was the sixth time I had done the job for that man and as he is a steady customer I made a little reduction." This emphasises the point I want to make, and if a person is well satisfied with the treatment he gets, he becomes a steady customer and you can do his work all the time. If you can produce honest goods, you will have a steady sale for them.

Now, in regard to the remuneration, I think it was Mr. Wattles or some one on the program who said that when he was out in the Western part of the country, in Washington, when he began talking with men about doing cleaner work—suppose for argument's sake they were getting six cents,—you should do the work a little better and thus produce a little better grade of milk and it would yield a better price, and so in the central states where the price is eight cents, by putting a little more labor the price can be raised, and then when he gets down to New York the better the prices, the better the milk, until the consumer



was obliged to pay from eleven to twelve cents. The same thought was heard: it was just a little more, just a little more, and the thought seems to be that within the mind of the person the sole aim and object of the producer is to crowd him to the point of seeing how much he will stand, and his demand is more, more, more! You see the point. I believe this that the dairyman who produces a good clean article that is satisfactory to his customer and to the public should have a profitable remuneration; that he should have the cost of production and labor which will enable him to live as a man among men, not as a millionaire, neither as a prodigal and the business should give him enough so that he can take care of his family and do the part of a man in the community, but I don't believe that he should do these things simply so that he can put on fancy prices.

Now, another thought or two: The dairy business is a substantial business. There are a great many men who think they are going to get rich out of the dairy business. I believe you can make a good living out of the business and that we can make some money, but that you may become independent and get rich, I don't believe it can ever be done. These men have become rich because they have crowded out smaller men. They have got corners on things. The Good Book says, "What shall it profit a man if he gains the whole world and lose his soul." The world doesn't care so much what we gain as how we get it. A person should not let these things into his life; that is, he must not let the Almighty Dollar come into his life to such an extent that it will warp his character and rob him of his integrity. A man's character is the only thing he can take out of this world.

I honestly believe that the business that is coming to us is that which molds our characters. The very fact of your being honest in the care of your milk, in the tests that you make and in the doing of all these things that pertain to the well being of a well regulated dairy farm, is that which helps to make character, and when you are called upon to lay down this life, it is the one thing you can carry away.

An Agricultural Professor was once asked what must be inculcated in the soil to get proper returns. His answer was short and full of meaning—"Brains, young man, brains." That is a good thing to help make a success in the dairy business. We must mix brains with our business in order to be successful. But we must put the true and tried heart in connection with brains into our work if we wish to succeed.

You have read in the papers just recently that the people in Huron and Sanilac counties who produced milk that was adulterated and that seventy-two of these were convicted of watering their milk, and as high as sixty-four per cent was found. If that is true, is it not a fact that we need honesty in the hearts of the dairyman to carry on the industry?

Another story and then I am through. It appears that a gentleman came out of a place of business and heard a tremendous report and explosion. He met a gentleman who lived in that district, and said to him, "Did you hear that report?" "I did, what was it?" "It was an explosion, how did it happen?" "Well, it was this way. Pat who works over at such and such a factory was carrying an armful of dynamite. The whistle blew. There he was, he hadn't quite reached the place where he was to deposit the dynamite, but he could not resist the

temptation and immediately the whistle blew, he thought he must stop work and so dropped the dynamite and it exploded." So, gentlemen, one of the things we want to do in building a character is that if you are carrying dynamite, be careful when the whistle blows. Thank you.

The Chairman: When Senator Forsythe was talking, he thought he would not go into the dairy business unless there was money in it. Dr. Waterman thinks we can afford to work for the satisfaction there is in it, but from this last speaker we conclude that it is not money or pleasure we are working for, it is the hereafter.

Mr. Lawson: You can make light of the thought I tried to bring out in regard to putting some character in our work, but it is a point just the same.

Voices: That's so.

The Chairman: I had no thought of disparaging anything that Mr. Lawson said nor would I desire to convey the impression that I was not in sympathy with what he was trying to bring out, but what we are trying to develop here is, how those of us who are getting a small amount of milk can increase our yields and produce it so that it can be put on the market at a profit.

Mr. Bartlett: I have been thinking that it might be advisable to go into the business of furnishing sanitary milk. I think since I have been here I have learned how much one would have to get for that product in order to make remunerative. I should like to ask Mr. Wattles or probably the gentleman who just sat down, how much must I get for that milk to make it profitable.

The Chairman: There is not one in the room who knows.

Mr. Wattles: You could name a price but it might be that it would be beyond what the public would pay for it. The public will, however, pay as much as it is worth when its value is made known.

Mr. Bartlett: But do you know?

Mr. Wattles: I would not take the contract of doing it for any less than ten cents. I know what I am getting, and I know what it costs me.

The Chairman: Then it is not all the hereafter that you are working.

Answer: No sir.

Mr. Lawson: That is all right, gentlemen, you can make light of what I said if you want to but there is coming a time when I shall not be ashamed of what I have said this afternoon.

Mr. Wattles: We are producing milk bottled, furnishing caps and delivering it and receive five cents a quart for all milk we can produce. We are milking ten cows and these ten cows are in all periods of lactation. Our milk is bringing us from \$117.00 to \$120.00 a month. That is nothing great. We do the work ourselves. We have boys who help and it is giving them a good education and it enables us to do a good business and we are satisfied with it. There is another side to the peddling of milk. Next year I expect to get six cents per quart.

Mr. Owen: I can not keep my seat. This has brought out the cause of so many failures in the dairy business in this state. You are not business men. In order to become business men, and in order to take hold of this as a business man, you should be able to tell to a pound what it cost you to produce this milk. If any one of you here who are

talking about losing money by producing this certified milk for Detroit or any other city, if you just sell out and move up into the Thumb and buy a few cows and keep track of what you are doing, weigh your milk from every cow, and if the cow is not paying you sell her, because we don't want to keep cows that don't pay. Cut out the small leaks and you will make money. (Applause). I am doing it and every man that will go up there and start in the dairy business and incorporate business principles will make money and he cannot help it. I am not a producer of sanitary milk because I am supplying cream, but I will tell you, gentlemen, there is not any line of legitimate business that a man can go into today that will make so much legitimate money every day of the year as he can in the dairy business, if it is properly conducted.

Dr. Waterman: You are just the man that I want to see here. What do you get for your milk?

Answer: I get extra New York prices for butter fat. I am getting 32 cents for my butter fat.

Dr. Waterman: What work do you put on your cows in the stables? What is your equipment.

Answer: I am not producing certified milk.

Question: I don't care about certified milk; I want you to tell me about commercial milk.

Answer: In the first place I have a barn with a cement foundation, and cement floor and tubular steel stanchions. I use rice straw for bedding and plenty of it. My cows' udders are clipped and are dry wiped every day. My cows are cleaned very thoroughly every day.

Dr. Waterman: How much does it cost you to groom these cows?

Answer: I cannot tell you just how much it costs me to groom each cow, but this labor, feed, and all, costs me forty dollars a year to keep a cow. I charge up so many hours of labor to this: so many hours for that, and the other things connected with these cows, and that with their cost of keep amounts to forty dollars for each cow. I don't know the items.

Dr. Waterman: It is business to know how much it costs to groom cows. We should know the cost of each individual item.

Answer: I believe it would surprise you to go over the state of Michigan and see how few there are who keep an accurate account, an individual record of their cows. I do not believe there are seventy-five dairymen in the state of Michigan that do it.

Dr. Waterman: We have kept a strict account of every pound of milk that we have produced for years.

A voice: Here is another.

Answer: I made a trip around to different places to see how the dairymen were doing the dairy business as it should be done, but I tell you I was sorely disappointed. There are mighty few men in the state of Michigan that are keeping track of anything in connection with their dairy business. I will grant that I am not doing this perhaps as it might be done, but I tell what my feed costs me; I hire so many men who put in their entire time on my herd and I ask my superintendent each Saturday night the cost. He has a record of how much labor is put in on the cows. At present I am keeping about seventy head and there are so many things to do on a four-hundred acre farm

that comes up for this superintendent to look after that I cannot ask him to go into the items of labor. I do not go into the separate items. I know that we have just got a new man through the department to take charge of my herd. He tells me that at ten o'clock he wants every man out of the barn. It strikes me as a very peculiar fact that the man has borne out my experience for years, that if I irritate my cows they will not give so much milk. I do not want to disturb them. After ten o'clock, he don't want anybody in that barn. At noon he and one helper do the work. At two o'clock one man does the cleaning. Right after dinner and from ten o'clock on he wants all the help to keep out of the barn so that the cows will be unmolested. It seems to me that the great trouble with the dairy industry is that one man will get up and sneer at the farmers' institute. You can not produce a good article unless you have the milk, and you cannot get the milk without weeding out the poor cows unless you keep track of it; you cannot make a financial success of dairying unless you keep track of everything and know just what it costs you.

Mr. Bartlett: Can you tell what the profit is on each cow?

Answer: I cannot tell you off-handed. If you should visit me at Carrall, I will tell you just what the profit on each cow is.

Question: Did you say the cows cost you only forty dollars for feed and labor for a year?

Dr. Waterman: If you will just let me talk once more I will promise not to get up again. But when I get stirred up I just can't sit still. I am so glad to know that he is selling butter fat at thirty-two cents. That is not a particularly fancy price. There are many people who have been getting that. Way last September we got thirty and thirty-one cents, but yet he is willing to say that he is making money in his dairy operations. That is what I want. Some people seem to like to carry the idea that you cannot do this. But I know that you can put into this more than what many are doing and yet have the balance of the ledger right. I don't hold myself up as a model dairyman. I am not in all respects doing the kind of a business I should like to do. I don't know but I should be ashamed to have you see our conditions, but I am glad to see someone who has had the experience and knows what it costs and who has found it to be a profitable business.

Mr. Vanderboom: The gentleman has told us that he can keep a cow for \$40 a year. I would like to ask Mr. Hatch to tell us what it costs him to keep cows per month.

Mr. Hatch: I have only been there since April, but during December our cows cost us from \$4 to \$11 each for feed and care.

A member: I saw those figures and those \$4 cows were dry cows; the milk cows cost \$9.50 to \$11 per cow.

Dr. Niles: When I handed in my fiscal report to the board I wanted to know from the steward what the cost of the keep of these cows were, and he told me that he didn't know just what they consumed. This year they are keeping an accurate account. Everything has been weighed that has been consumed and a record is kept of all that was bought. These cows eat at the first table. When he gave me the figures I felt sore because they were not making the money they did the year before and it cost a trifle over \$100 a year to feed those cows.

Now another side. They were given credit at the rate of \$1.50 per hundred for the amount that was produced and their off spring from each was sold, or inventoried and those cows made a net profit of \$10,000 to the state of Michigan.

In regard to the gentleman of the upper peninsula, I think there is a lot of room for missionary work right in his part of the country. Instead of selling the hay, feed it to your cows and ship it in the form of milk and cows and you will get the same rate.

In regard to knowing what your cows are doing, I have been around the state and have come in contact with some of the best dairymen. I would mention particularly Mr. Goodrich of Wisconsin, and he emphasized very strongly the idea of knowing your business, having your scales, hang up the pail and test the milk of every cow and if there are a lot of star boarders in the herd, as there usually are, weed them out.

Not long ago I dreamed that Mr. Goodrich had died, and that he was in mortal fear of being buried alive, so he left it in his will that he should be tested with the Babcock Tester to know whether he was really dead. (Laughter).

Mr. Voorheis: Can you give us figures per cow, not counting the live stock?

Answer: I can not. They get a good price for the stock.

Mr. Bartlett: I would like to ask Dr. Niles if he knows the amount of butterfat in that milk that he is selling at \$1.50 per hundred.

Dr. Niles: No, but it is good enough to keep the patients in good condition.

Mr. Butterfield: At the beginning of this discussion something was said about consumers. Several years ago I might have been eligible as a producer, but just now I am a consumer. I judge from the tone of the talk, that the dairymen feel that they are quite helpless as regards price of product. I am of the mind that the consumer is the most helpless. We have no methods of regulating the price. The milkman issues so many tickets for a dollar, and we hand out our dollar. There is no means of our judging of the quality of the milk except by the little cream that rises on the top—can not tell anything about the bacteria—we have to depend upon the milk inspector and the city Health Board to weed out the most merciless of the producers. I have wondered if the producer can not come in and have some say in this matter. Of course the milk inspector and others are supposed to look after this matter, but we all know that there is an immense amount of milk of very bad quality that slips past their inspection, and the producer has to pay just as much for that as for a first class article.

Dr. Whittaker: Just a suggestion: It often happens that the various cows of a herd vary in the quality of the milk they give. The proper way is to thoroughly mix the milk and in this way a larger percentage product can be obtained because of the two or three heavy milkers of the herd.

Mr. Reed: I do not think we should make misleading statements. I heard of a gentleman who was producing 39 pounds of milk per day for fourteen cents, and selling the milk at 80 cents a hundred. This was making 125% on his investment, and turning the money over every day. This is better than any bank in the state of Michigan is doing.

This man continued in the business for a long time, and yet he died a poor man. Now, I want to say that when Dr. Waterman has had more experience on a farm, he will find that it is not such an easy matter to produce a herd and put it on a practical paying basis as he anticipates at this time. These broad statements as to the cost of producing milk should be itemized, every cost of production of that milk should be made so that we may scrutinize it and find out whether or not it will hold water. When I go out over the state and meet people selling milk at \$1.50 per cwt. a great majority of them are not sporting a diamond ring. You will find the father and mother and perhaps three daughters going out in the morning to the stable to take care of the cows, and doing their best to save the old home from the mortgage, and there is where we want to start it. There is a great deal of difference between a rich man's fancy and a poor man's necessity. (Applause).

The Chairman: It is not what a cow costs or what the cost of keep is—what we want to know is, what does that man produce in profit from that cow? That is the question that concerns us.

Dr. Waterman: With all due respect to Dr. Reed, I feel that he has wholly misunderstood me, and that I have been misrepresented. The very first statement I made here today in my opening talk was to the effect that we ought to produce as good milk as we could for a price to take care of the cost and give something besides. I haven't said anything else all day. I agree with the doctor that a man who is keeping a herd of cows wants to know what he is doing in dollars and cents; he should know what everything costs him. But I want to say that when I talked about the cost of clipping the udder and washing the udder, the figures I gave is what it costs us. We may not have done the work the best way nor as thorough as it should be done, but what we did didn't cost us any more than the amount I stated.

A member: I started in the milk business sixteen years ago, and I started at the bottom. The stable was in such a condition that one needed tight boots to walk around the cows. There was no plank floor, the sides were stuffed with chinking, there were cobwebs. The first milk inspector said the place was not fit to run. However, I managed to make a profit of a little less than \$8 per acre. That was sixteen years ago. The last inspector that was there said that if all places were like mine he would lose his job. This last year I made a profit of \$32 an acre.

Question: How many acres have you?

Answer: 120 acres.

Question: What do you count that it costs you per head to keep your cows?

Answer: It costs about sixty dollars per head to keep these cows in feed and labor. I get a net profit of about \$5 per day and don't work very much either.

Mr. Chairman: We would be glad to hear from Mr. True. I see he is here, and I know he can give us something practical.

Mr. True: It is hard for me to tell just what it does cost me to take care of fifty cows. They live in a barn that cost several hundred dollars. One-fiftieth of that cost must be taxed up to each cow. There is then the investment in land on which they are pastured—the proper pro-

portion of that must be charged up to the cows. Then the cost of a man, how much it costs to keep him besides his wages, a certain proportion must be charged up to the cows. There are lots of expenses that do not come in there. Sometimes when we want to prove a point, a lot of these little incidentals are not included in a general statement. I would like to see the whole truth about a matter told. The proposition is a big one, and I honestly believe that it is a pretty difficult thing to get at the exact truth as to the cost of keeping a cow on an ordinary dairy farm, and more difficult to get at exactly than many may think at first glance.

Mr. Bechtell: One of the greatest difficulties that the dairyman is laboring under is the costly feed that he uses. I tried to induce Prof. Olin to use cottonseed meal but he said "No," but decided to make a test with five cows. He will admit that feed is costing him more than his ordinary way of feeding, but on the other hand, the cow is producing more. Dr. Olin has everything figured, what it cost for his team, his buildings, interest on investment, and I was surprised that he was feeding his cows for what he was.

Mr. Probert: It seems to me that we are getting away off from the milk in the cocoanut. Here is one friend who knows what he is doing, and says that his cows cost \$40 per year. Here is another man who knows equally as well who says that his cows cost him \$100. Gentlemen, who knows what these figures mean? This man may be feeding one kind of feed, and this other man something entirely different. The problem must take into account the cost of labor, and there is no man that can hire first class help and feed and treat it right for less than \$10 per cow per year, whether in the Upper Thumb or in Pennsylvania. I do not believe that you can keep a cow for \$40 a year and do it right. The milk in this cocoanut lies in this fact, not in what we do nor what we pay out, but it does lie in what we have left after we have paid the cost. That is what we are in the business for. The best feeder, the best care-taker is the man who can produce milk at the least cost with the greatest profit, and this can only be done when he is careful to watch the details that are always connected with the business.

Now we want to come back to Mr. Bartlett's question—to know the price. He has not been satisfied with the answers given. That price varies materially in cows and also in the man. But it is my firm conviction, and I think I know what I am talking about when I talk about production, for I know what each cow has cost me for fifteen years. Every day my books are balanced for that day, and every month and every year. I know just what I am doing and what cows are paying me, and how much. I have cows that do not cost me \$50 a cow, and I have others that cost me \$100, and I wish I had more of the cows that cost me the latter price. I feed a cow in proportion to the work she does, and the more she eats, the more milk I will get from her, for any cow that will return \$2 for every dollar's worth of feed, I will feed her as fast as she can do it.

In the production of first class milk, I will say that I am selling certified milk in Jackson at less than certified milk is sold for anywhere else in the United States. We get ten cents a quart. I am satisfied, for I am not losing money. I prefer to produce the best quality.

Now, getting back to the cost of the keeping of the cow. I do not have to go a half a mile from my home to find neighbors who I do not think is feeding a pound of grain to his cows a year. Yet he is trying to make money selling milk. It would be far better for him to sell his farm stock, leave the farm and take up some other line of work. We can talk about the cost of feed, the expense of labor and all that, but the practical question is, what am I getting out of it? It lies with the man, the farm he is on, how he milks, the kind of cows he keeps, the care he gives his animals. I could perhaps get more for milk, but I am getting all that I think I can without driving all over town, and that I do not care to do.

A member: I would like to know the cost of feed—what would the feed sell for. I would like to know that.

Mr. Owen: With me I charge my labor; for instance, my silage costs me \$1.52 per ton, and I estimate it like this, I give my land credit for \$4 per acre for the use of it. You can rent land for that price. I charge \$3.50 a day for man and team, from the time the ground is broken until the corn is in the silo. I charge up \$6 for clover hay at the price it was selling for when I put my hay in the mow. I charge up for cottonseed meal at the rate of \$32.50 and for cottonseed oil meal at \$32.85. I charge my cows for the labor at the actual cost to me as reported to me by my superintendent each week, so many hours put in at the stable by each man. Then I give credit for the difference between the butterfat and the total amount of milk received, less one-fifth for waste in skim milk, at 20 cents per cwt. I give her credit for heifer calf at \$10 and a bull calf at \$5. I give her credit for \$20 a year for fertilizer. That is not accurate, but if there is an error it is on the side of its not being enough. Perhaps you will differ with me there, but I will ask any gentleman to take the schedule of Bulletins gotten out by our Agricultural Colleges, or schedule of the value of cow manure, after the cow has been fed certain feeds and follow it through, and I think it would be found that the value of fertilizer from one cow on clover hay alone is worth something like \$7.50 as compared with the price of commercial fertilizer.

Mr. Haven: I have visited five thousand dairy farms. I ask each man the question, what does it cost you to feed a cow for a year, and not one man in a hundred can tell you. I have been working in the vicinity of Jackson, and I found just one man besides Mr. Probert who could tell, and he said it cost \$103. One man was milking 30 cows, and was feeding them on ensilage and a little corn meal, and he said that he was not feeding very much because feed cost so much. I have always said that it was a better combination to have a good dairyman with a poor cow than a good cow with a poor dairyman, because the good dairyman knows how to feed to get the best results, and he can often get better returns from a poor cow, by judicious and intelligent feeding and care than a poor dairyman can obtain from a good cow fed and cared for in a haphazard manner. If you should see the man's herd you would not question what I say.

Mr. Probert had two carloads of feed in his barn. He buys at the right time and in quantities so that he gets the very lowest prices; he keeps an accurate account of what everything costs him, and what he



gets out of the business, and any man that works on this basis will be successful as he is.

Mr. Warren: I think a person should keep a record of his cows. I could not make money if I did not know where the leaks were. I can tell just how much milk my cows have given every day since I went into the business. On one farm of 200 acres we keep 28 cows. There are only twenty out of the twenty-eight that were there a year ago. I wish to say a word in regard to the covered pail question. I do not have what might be called a sanitary barn. We have cement floors, and try to keep things neat and clean, and we use the sanitary pail. We have a sterilizer for bottles, and we bottle our milk just as soon as possible after it is drawn, sometimes within three minutes. We obtain all the year through a uniform price of 25 cents per pound for our butter.

Chairman: If there is not further discussion on this question, the meeting will stand adjourned until this evening at 7:30 and we hope you will all be on hand promptly.

#### EVENING SESSION, FEB. 1, 1910.

Mr. Ira O. Johnson in the chair.

Chairman: From present indications this promises to be one of the most enthusiastic and profitable meetings that the Association has ever had. I am glad to see so many present, and as there are some good men to talk to you, we will proceed with the regular order of the program at once. Prof. Ivan C. Weld of Washington, D. C., is on the program for an address on the subject, "The Consumers' Part in Solving the Milk Problem." At the last moment, Mr. Weld found it impossible to leave Washington on account of pressing duties, and in his place, sent Dr. Whitaker, who will give the address of the evening.

#### THE CONSUMERS' PART IN SOLVING THE MILK PROBLEM.

DR. GEO. M. WHITAKER, DAIRY DIVISION, WASHINGTON, D. C.

Mr. Chairman, Ladies and Gentlemen: I rise to speak with more than usual embarrassment, partly because you were expecting Professor Weld, and I realize I am a mere makeshift, and partly because I had been informed that the lecture was to be illustrated and had therefore brought some lantern slides but I find that no preparation has been made for a lantern, so I will have to forego the assistance of the pictures in making what I am to say more impressive and suggestive.

The topic assigned me is "The Consumers' Part in Solving the Milk Problem" and I start with this proposition that first of all the consumer must know what the milk problem really is.

First, the consumer must have some knowledge of the food value of

milk. Milk contains all the substances that are needed for human nutrition. It has the casein or the protein element; it has the sugar; it has the mineral matter; it has the fat. And it has them all in an easily digested form, and is nearly a perfect, an ideal food.

Second, the consumer should know that milk is one of the cheapest foods there is. Take average,—or twelve and a half per cent,—milk, you know what that means; it means that every one hundred pounds of milk has twelve and a half pounds of dry food matter. If one hundred pounds of milk is put over heat, there will pass off as steam or vapor about eighty-seven and a half pounds and there will be left a dry powder weighing about twelve and a half pounds. One hundred pounds of milk is forty-six quarts and at 8 cents per quart—about the going price—the dry food material of milk costs the consumer 29 cents a pound, every part of it digestible, without a particle of refuse. Sirloin steak costs 25 cents per pound with us at home—I suppose it is not much less here—but you have to throw away about one-third of it in the bone and other non-edible portions. Then if you should evaporate the moisture you would find that the dry food in sirloin steak would cost about 75 cents a pound as against 29 cents per pound for milk. If people want to economize they should buy less sirloin steak rather than less milk. If you will do this, your children will be stronger and healthier.

Some people think that they must have chicken once in a while, but when the wings, legs, neck, bone and other non-edible parts are removed a large portion of it is gone. At the going price, the solid food of the chicken costs up to nearly one dollar a pound as against 29 cents per pound for milk. The consumer should understand that milk has high food value and low money cost. It is one of the best foods there is as well as one of the cheapest.

If that was all there is to the milk problem we would have an easy time but unfortunately there is another side to the case.

Third, consumers should know that valuable as milk is and cheap as milk is, it may under some conditions be a dangerous food and therein is the modern milk problem. The comparatively new science of bacteriology has within a few years been turned upon the milk supply and has shown that milk has some dangers connected with it.

In the first place it is possible for tuberculosis to be conveyed from the bovine to the human race through the milk. In the next place it is possible for typhoid and scarlet fevers also diphtheria and some other diseases to be conveyed by means of milk from one person to another. Cases are on record of epidemics of typhoid fever due to the milk supply. Furthermore, it is possible for milk to contain forms of bacteria that cause indigestion and stomach and bowel troubles.

These are facts that the consumer should understand but these facts should be looked at calmly and sanely and without any hysteria. Mention was made this afternoon and justly of the reprehensible way in which the more yellow of the daily newspapers allude to these facts, treating them so sensationally as unduly to scare and alarm the consumer. That is wrong. I remember a lecture in Boston in which an eminent bacteriologist of national fame explained some of the dangers of milk. The daily papers came out the next morning with great scare heads across three or four columns saying that there were as many bac-

teria in the milk of Boston as in the city sewers. That was in a measure correct but stating it as the newspapers did tended to mislead and unduly to alarm consumers and injure the milk business. More recently a sensational New York newspaper published a half page cartoon picturing a milk bottle rising out of which was a skeleton representing death whose bony fingers were extended over the babies of the city. I deprecate sensationalism, and yet the possible danger of milk is a fact and must be looked at rationally and calmly. The consumer must understand the situation if he is to know how to solve the milk problem. Going back to tuberculosis, that is carried through the milk from diseased animals to human beings, the only way to have the milk supply perfectly healthy and safe as far as tuberculosis is concerned is to have the animals healthy, and the only way to know if they are healthy is by the tuberculin test. As far as tuberculosis is concerned it is the consumers' part in solving the milk problem to insist upon buying milk of healthy cows. If the consumer will ask his milkman if all of his cows are healthy, if they have been tuberculin-tested, there will soon be a demand for that kind of milk and the enterprising producers will supply it. It is the duty of the consumer to insist that his milk shall come from healthy animals, and when this demand is made there will be something doing along the line of supplying milk that will be free from these disease germs.

Then as regards the danger from milk as a disseminator of typhoid fever. If the germ does not get into your system or mine, we cannot have typhoid fever any more than we can grow corn in a field where none has been planted. The typhoid germ comes only from a typhoid fever patient and from the excreta. These germs get onto the hands of the person that is taking care of the patient, sometimes in handling the bedding or the clothing, and then if the attendant is careless about washing and sterilizing his hands, the germs may be carried to his mouth possibly by handling food or in other ways. A common way of spreading typhoid by means of milk is when a person who is handling a typhoid fever patient washes the milk utensils. It may be that it is the house-wife or mother of the family who is called upon to care for the sick as well as to do the housework and in addition to wash the milk pails, strainer, and bottles. The germs of the typhoid fever get from the hands onto the bottle or can or pail, these are not thoroughly sterilized, milk is poured into them and the germs into the milk and go wherever the milk is delivered. Thus it is not an infrequent occurrence that a dozen, twenty, or twenty-five cases of typhoid fever will develop in a town all traceable to that one sick person in the dairyman's family. Not long ago there were two hundred and twenty-five cases of typhoid fever in Savannah, Georgia, seventy-five per cent of them being known to have used milk from the same dairy.

The consumers' part in solving the milk problem so far as these contagious diseases are concerned, is to get milk from a dairyman who is careful and conscientious, who has facilities for sterilizing his utensils and who takes this precaution.

The third class of troubles from milk is the largest and most important—danger from tuberculosis and fevers is relatively small. The bacteria in milk that interfere with digestion are forms of bacteria

that are intimately associated with dirt. Any dirt that gets into milk carries with it many bacteria. Years ago, when I was quite a boy a neighbor one day set out a couple of bowls for the milkman. When he came along and saw the two bowls he rang the door-bell, the lady came to the door and he said, I see two dishes out here, do you want two quarts of milk or do you want milk and cream? The lady replied, I thought if it didn't make any difference I would have the manure in one dish and the milk in the other. She thought that was a good joke and told it to her neighbors as an evidence of her sharpness. With our present knowledge we don't treat dirty milk as a joke; we know that visible manure and other dirt in milk and the invisible soluble parts with it mean poison, especially for those of weak digestion. Hence dirt in milk is a serious proposition and the importance of clean milk is very great. And then, again, after these bacteria get into the milk, (be as careful as we may there will be some), they multiply very rapidly especially when the milk is warm. Hence the milk should be cooled as promptly as possible and kept cool in order to prevent multiplication of germs.

This phase of the question emphatically relates most intimately to the babies of the community for many get their entire living from the milk bottle. Many of the cases of cholera infantum and bowel complaints to which babies are subject are due to bad milk. It has been proven time and time again in hospitals and other places where exact figures could be secured that improving the milk supply along the lines of cleanliness reduces infant mortality. Since the improvement in the supply of milk for babies at the Infant Asylum on Randall's Island, the mortality has been reduced seventy-five per cent. We hear a good deal now-a-days about the conservation of our national resources, what resources have we that are any better than human life?

Now then, bacteria get into the milk primarily through the dirt that is in the air, the dust, and there is more or less dust in the air at all times; you ladies know how that is in your cleanest rooms; you shut them up for two or three days and at the end of that time can write your initials in the dust that has collected on mantels and tables. Dust is falling all the time just like flakes in a snow-storm not only in the dirtiest but in the cleanest places—of course more in the dirty places than in the clean. So in a dirty barn with unswept floors, and walls and ceiling loaded with dust and cobwebs, there is danger for invalids and babies. If the milk is not removed promptly from the stable the contamination will increase. There is also danger of bacteria getting into it from flies. In New York City a study of the spread of typhoid fever was recently made and a hundred-thousand fecal bacteria were counted on the legs of a single fly. Did you ever think what a terribly filthy creature a fly is? It eats almost all filth, it wades through manure-piles, congregates on human excreta and other decaying substances, then goes into the barn and perhaps tumbles into the milk pail. Until within the last few years but little attention has been paid to this source of contamination. I recall going into a milk room and counting fifty dead flies in the strainer cloth over the bottling machine. Think of the bacteria that these flies could communicate to that milk.

The milk utensils may be a means of the bacteria getting into the

milk. This new knowledge of bacteriology has given an added emphasis to the word "cleanliness." I have been in some dairies where the milk pails were apparently clean, very bright indeed, from scouring, but where a knife or a toothpick run along down the side in the seam would bring out a lot of repulsive dirt, which, under a microscope, would be found literally alive with bacteria. More than once I have incurred the ill-will of the good women of the house by calling their attention to their methods of washing milk pails, but they were not wholly to blame. The manufacturers of milk pails should see to it that they are made without seams or else that the seams are well filled with solder. The dairyman should see to it that they have milk utensils without hidden places for collecting and concealing dirt. Finally, the milk should be properly and promptly cooled.

The consumers' part in solving the milk problem so far as this class of contamination is concerned, is this: Insist upon reasonably clean conditions at the dairy, not the degree of cleanliness expected in the production of certified milk but just good ordinary conditions. Certified milk is distinctly a medical proposition. Certified milk is a dishonest article unless it has been certified by a medical association as having been produced under rules and supervisions laid down by that association. It is clinical milk. It is milk for sick babies. If any of the rest of us can afford certified milk and are fortunate enough to live where we can get it we can cater to our aesthetic tastes and it is a mighty good thing to have it. It is an ideal to look up and forward to, but we don't want to confuse that with ordinary market milk. There are all degrees of cleanliness, from the place so filthy that it should be put out of business immediately to the place that is producing certified milk under the auspices of a medical association. I say that the consumer has a right to insist upon reasonably clean conditions. I attended a milk meeting in Cincinnati a few months ago and one of the speakers was a lady, Chairman of the Domestic Science Committee of the City Federation of Women's Clubs. She had read in the papers of the importance of clean milk for infants and thought she would like to know where the milk was produced that she was feeding her baby; she found from her milkman where he bought his milk and one day drove to the farm and told the dairyman that he was selling milk to such and such a person from whom she purchased it and that she wanted to look over the place where the food for her baby was produced. She was received courteously but told, "Madam you know that a dairy is not a proper place for a lady to visit." Consumers can help solve the milk problem by taking an interest in the cleanliness of the dairies that produce milk for their families and in the way the milk is handled, visit the dairies where the milk is produced, insist upon having it delivered in bottles, cold and in a sanitary condition, it would not be long before there would be a righting of many of these wrongs and but little cause for complaint. Consumers can do a great deal in solving this milk problem by proper care of the milk in the home. These principles as to cold and cleanliness apply as well in the home as in the dairy. Covers should be kept on the bottle or vessel in which the milk is held. The milk should be kept in a refrigerator and should be uncovered only when pouring it out. Never pour out twice as much as you use and after exposing the unused por-

tion to the air for a few hours turn it back. Keep it in a clean place, keep it cold, and above all things keep the flies away from it. If you are feeding a baby with milk be sure that the nursing bottle is cleaned thoroughly every time it is used, that it is rinsed, washed and scalded, and don't have a bottle that has a rubber tube connecting the nipple with the bottle; that piece of rubber tubing is hard to keep clean. Don't have a bottle with any corners or angles. Have a round bottle with a nipple that will snap over the top and thoroughly boil this nipple every time it is used. Another thing that the consumer can do in helping to solve this problem is to return clean bottles to the milkman. As soon as a bottle is emptied it should be at least rinsed.

In this talk I have alluded several times to what the consumer should know as regards the source of his milk supply. He should take some interest in seeing that the cows that produce the milk are healthy; that the dairyman and members of his family are healthy; and the utensils sterilized so as to prevent possible spread of typhoid fever, diphtheria, etc. He should see that the dairy is fairly clean and the methods of handling the milk clean. When we get into large cities like Detroit it is impossible for every housekeeper to do this personally; the consumers must do this inspection by proxy and their proxy is the health officer. There should be a good set of milk ordinances and a good health officer to enforce them and it is the duty of the consumer to stand firmly and squarely back of the health officer so that he will be a power in the community in using his eyes for the eyes of the thousands of people who cannot individually go to the dairy. Public sentiment makes law and the health officer will be rendered more and more efficient if he realizes that there is a good solid sentiment back of his work of enforcing the laws. With good laws and a good health officer the consumer can further help solve the milk problem by occasionally calling on the health officer personally or by telephone and inquiring after the standing of the source of his milk supply. If the score card system is used, asking the rating of his milkman. In that way the better class of dairymen will be the ones that will have a steady demand for their milk and the places that do not stand well because of their bad conditions will gradually lose business and close out.

Another thing that the housewife can do is, when a bottle of milk has set a while and before it has been shaken, to take it up carefully and look up at the bottom and see what there is in the bottle besides milk. If there is a ring of dirt in the bottom it will show you that the dairyman needs looking after. It is surprising how many dairymen do leave their marks in the milk bottle. The consuming public is a little bit careless as to the interest it takes in the milk question; and in doing its part in solving the problem it ought to shake off some of the prevailing apathy. At Grand Crossing in Chicago not long ago a train ran over a prominent person and killed him. An indignation meeting was shortly held in that section of the city and four or five hundred people came out and protested against that crossing; and yet thousands and thousands of people use that crossing without accident; the fatalities are possibly less than one-tenth of one per cent. What if some one should say, "What is the use of making all this fuss, hardly one-tenth of one per cent of the people who use this crossing are injured, a very

small number and not worth troubling ourselves about." Such a proposition would justly be hooted down. A little while afterwards there was a terrible mining accident in Illinois when one hundred and fifty or more men were killed in the mine and one of the Illinois Congressmen made a most impassioned appeal in the National House of Representatives for an investigation because one hundred and fifty people had been killed in one mine. A great many more than one hundred and fifty babies are killed in Chicago every year by dirty milk and there is only a feeble protest. Speaking on general principles I would not wonder if there are annually fifty or more cases of fatal cholera infantum and allied diseases in Detroit during the months of July, August and September. These little creatures pass out of life so quietly in the silence of the different homes that not much attention is given to it. As long as there is nothing spectacular about it like a mine catastrophe or railroad accident we are apathetic. The consuming public must arise to the exact facts about milk and the exact dangers—not in a hysterical panicky way but in a common sense manner. Not every person that runs to catch a train dies of heart disease; not every boy that eats green apples and cucumbers in the summer dies of cramps; not every fellow that rocks a boat is drowned; not every one that points a gun thinking it is not loaded causes disaster; yet we do not recommend any of these things. It is just as logical and just as important that we should preach against dirty milk, that the consumer should insist upon knowing something of the supply he gets and should take an interest in its being clean.

In closing I want to make one more point in reference to the part the public can act in helping to solve this milk problem, and that is, the consumer must be willing to pay a fair price. The consumer must realize that there is a difference in the kinds of milk and not think that all milk is milk. Suppose your President here is producing milk from a dairy that scores eighty and I am producing milk from one that scores but thirty and is pretty filthy, ought not the consumer to know that there is a difference in the milk from the dairy that would score eighty and milk from another that would score but thirty? My milk from a thirty per cent scoring dairy might be expensive even as a gift and the product from the other dairy might be cheap at ten or twelve cents per quart. The consuming public must understand this; must understand that this is a part of the problem of solving the question. The question for the milk consumers is not what price shall I pay but *do* I get my money's worth? A gentleman in Washington was buying milk of a certain milkman at ten cents a quart ( I get my milk from the same man) one day he said to the milkman "I have been getting a quart of milk a day from you at ten cents a quart, I also get two quarts from another man at seven cents which gives good satisfaction, I want some of your milk but can you not sell for a little less than ten cents? The reply came quick and pert, "If the seven cents milk gives satisfaction why not buy all of that kind"? A lady acquaintance in Massachusetts took up dairying as a means of livelihood on account of the death of her husband; she gave her cows the best of attention and produced a fine article of milk; she raised the price to nine cents a quart and some customers demurred saying "Nine cents is too

much, so-and-so is selling milk at seven cents." This lady replied "I know it but that is seven cent milk, if you want nine cent milk, buy of me." The consumers caught onto the idea and she lost very few customers. The consumer must understand what good milk is and then realize that it is worth something, and that it may be cheaper to purchase good milk at even ten cents a quart than to take dirty milk as a gift.

The Chairman: The discussion can be carried on a little later after some of the other papers have been read. The one thing more than anything else as mentioned by Dr. Whitaker that will aid the milk consumer to get clean, pure milk is personal inspection. If every milk consumer will visit the dairy from whom the dairyman receives his milk it will be the best educator to the consumer and it will be the best kind of a "club" or, if you please, "Big Stick" to make the dairyman produce clean milk and one that is always sanitary and healthy.

The next subject on the program is "City Milk Inspection and Its Problem," by Dr. Floyd A. Robison of Lansing, who will now address you.

## CITY MILK INSPECTION AND ITS PROBLEMS.

DR. FLOYD A. ROBISON, STATE ANALYST, LANSING.

Mr. Chairman, Ladies and Gentlemen:

Before discussing this topic which shall be very brief, I want to call your attention to an exhibit which we have prepared in the Exhibition Hall which really needs a little explanation before it is readily understood. I regret that I have not had opportunity to get the exhibit in such shape that you can easily see, as yet, just what we are driving at, and for that reason I want to explain it.

At the further end of the Exhibition Hall we have arranged a number of food diet charts, and in the front of these, on the slightly raised platform, are a number of toy trains of cars. We have supplied as fuel some of the more common meat food products, on the markets. We have arranged, likewise, three principal dairy products, cheese, butter and milk, and they show their relationship in this food test, to smoked ham, sirloin steak, round steak, leg of mutton, eggs and oysters.

We hear quite a good deal at this time of the exceedingly high price of food products, and thinking that some of the city consumers would be here tonight, I have taken special pains to present this point.

The meat products and the dairy products are generally considered to be high priced products. Now we have started these little trains of cars from one particular point, and instead of using coal for fuel we have used the different food products for fuel. You will remember that meat, for example, serves exactly the same purpose in the human body that coal serves in the engine. Milk and butter and cheese do the same. All these food products are more or less like coal, which furnishes motive power to drive trains of cars. We have the trains of cars on



the tracks to show the exact position that these products each occupy in the dietary. In the first place we have taken one dollar's worth of the materials. Each one of these little engines is supposed to burn one dollar's worth of these different food materials.

With cheese at 20 cents a pound one dollar's worth of cheese will run the engine nearly across the table. I have divided the distance into what we call caloric miles. Cheese will run the train 9.8 caloric miles on a dollar's worth. A dollar's worth of butter at 35 cents per pound will run it 9.74 caloric miles. Milk at 7 cents a quart, will run the train 9.58 caloric miles. These, as you know, are the three staple dairy products.

Smoked ham which comes next in the line at 22 cents per pound will run the train 7.49 caloric miles for a dollar. Next comes sirloin steak, and I have estimated it rather low, 16 cents per pound, and instead of 9.8 caloric miles, which a dollar's worth of cheese will run the train, sirloin steak will run the train only 6.6 caloric miles. Round steak, at 15 cents per pound is not as economical as sirloin steak at 16 cents for it will run the train only 5.7 caloric miles, only a little more than half as far as cheese or butter or milk will run the train for the same money. I have here leg of mutton at 16 cents per pound and it will not quite run as far as round steak, being 5.21 caloric miles. Next comes eggs and I have estimated a price of 30 cents per dozen for them which is low. I have tried to strike the average so that this would not be exaggerated by low prices on the one hand or high prices on the other. A dollar's worth of eggs at 30 cents per dozen would run the cars only 2.88 caloric miles. In other words, eggs have only about  $\frac{1}{4}$  the value of cheese. We have to pay 50 cents per quart for solid packed oysters. This train ran only 1.3 caloric miles on a dollar's worth of oysters. What I want to illustrate is this, it seems to me that it is worth a little thought and consideration that with cheese at 20 cents per pound which is a high price for cheese, and with sirloin steak at 16 cents per pound, which with you, perhaps, is a low price—if cheese is normal at 20 cents per pound, sirloin steak ought to sell at 11 cents and round steak at 10 cents to be comparable in food value. Milk could be sold as high as 10 cents per quart before it would exceed the value of sirloin steak at 15 cents per pound. Before eggs could compete with cheese, for example, at 20 cents per pound we would be obliged to get eggs for 10 cents per dozen. In other words, if we change it the other way round, we should not accuse cheese of being expensive on the basis of sirloin steak at 16 cents until it has exceeded 30 cents. So milk should not be expensive until it exceeds 10 cents a quart. We cannot strictly put butter in this class, but if we could do so, we could pay about 40 cents a pound for butter before we would be exceeding in value sirloin steak at 16 cents per pound. The reason why I bring these things up is this: the value of dairy products is not as clearly and generally recognized as they should be. The value of eggs is very much overestimated. *I would not have you misunderstand me in this.* Do not think that I am advising you to do without eggs; that is not the point. After you have a certain amount of eggs in the diet, stop buying eggs and buy something else. Just the same, after you have bought  $2\frac{1}{2}$  pounds of proteid in cotton-seed meal don't go on buying

cotton-seed meal for it is altogether too expensive a product to use merely as fuel, but get your fuel from another source. The same principle applies in the human dietary.

I hope you will look these exhibits over in detail. You will find charts showing you how other products can be figured. I have used nothing but animal products. You could begin to use beans and other products that are more reasonable and that would offer a valuable adjunct to the ration. The dairy products at the present prices are not as expensive as the other animal products by a considerable amount.

I will now speak briefly on the subject in the program of "City Milk Inspection and its Problems." The Dairy and Food Department during the last two years has been spending a good deal of time in the examination of the city milk supply, particularly during the hot summer months of July and August. The reason is, that we have found the greatest prevalence of infant diseases and the greatest amount of ailments from the disease of infancy occur during these hot summer months, and as the infant uses a large amount of milk we have connected this up, with the milk supply at this time of year, and naturally charge it with being to a greater or less extent, responsible for this condition. For this reason, so far as the finances of the Department would permit we have devoted every possible energy that we could to the study of the milk supply during the hot summer months and we find a very great variation in the conditions. I think possibly, that it may be said that I am representing here tonight the conservative position of the milk problem. I am conscious of the force of the arguments of the people who may be somewhat ultra-enthusiastic over pure and clean milk as retailed in our cities. I might specifically refer to a person holding a position of milk inspector in the city, or health officer. His duties bring him directly in touch with one class of our citizens, and with a small portion of that class, namely the consuming public. The people in the cities so far as milk supply is concerned, are at the mercy of the milk producers and the milk dealers, and each one, the milk seller and the milk producer comes in for his share of the blame of the trouble that is United States that is one bit too good. There is a lot of milk produced in any place in the State of Michigan or in any place in the United States that is one bit too good. There is a lot of milk produced that is altogether too bad, but there is a considerable quantity of milk that has a valid legitimate place as a food product that still comes between these two classes. Probably the highest quality of milk that is sold upon the markets of the State and Nation, from consumer's standpoint,—I refer to the quality from the standpoint of sanitation,—is the so-called certified milk. Were we to discontinue the use of all milk at the present time, except such milk as is certified and could be delivered as certified milk we would be using little if any milk at all, because the amount of certified milk that can be produced is exceedingly small indeed. It is but a drop in the bucket, but it stands out as an excellent standard to work to. The price of such a product under these conditions would be so prohibitive that very few could use it, if they could obtain it.

Now many are advocating certified milk; and personally, under adequate supervision, I am heartily in favor of certified milk, for the

cleaner and purer the milk can be secured, the better food product it is. Certified milk was explained to you by the previous speaker and so I will not go into any discussion of what it is. But it is practically impossible to deliver certified milk if it is handled in the way that ordinary milk is handled by the consumer in the city. We have a little deeper insight, and perhaps on that account, a little deeper sympathy with the producer of milk, than does the ordinary health officer; but I would not have you infer that I am in any way criticizing the vigilance of the health officer; on the contrary, we are backing him up with every bit of energy that we have, but I would have you remember that there have been prominent, capable men, engaged in the education of the dairymen along the lines of the production of cleaner and more wholesome milk for the last forty years. Ever since the organization of the Farmers' Institute Movement which has spread throughout the United States, this product has been, time after time, brought to the attention of the milk producer—the question of care and cleanliness in the production of milk has received the consideration of those interested, and to paint a picture here before you which would lead you to discontinue the use of milk would be comparable to telling you that conditions in general in the country are getting worse rather than better. The ring on the outside of the doughnut is getting larger all the time, and the hole is getting smaller, because it is impossible, and the results show that the continued preaching and talking of prominent Dairymen—Farmers' Institute workers, Inspectors, and others, is having the desired effect. There are here and there, throughout the country, dairymen who do not seem to be advancing with the tide, but from the discussion that I heard here this afternoon, those who took part in that discussion are certainly eliminated from that class, because they know that to produce profitable milk, they must produce clean milk, just as clean as it is possible to make it.

After the milk leaves the producers' hands it passes into the hands of the city retail seller and dealer. This man as a rule, at least, frequently, knows less concerning the care necessary to keep that milk in good condition, than the man he bought it of. Now when he gets up at three o'clock in the morning, delivers this milk around his route, perhaps in bottles,—all milk is bottled in the city of Detroit,—he received in return a bottle which is left on the door-step by the housewife, and I regret to say, that the house-wives as a rule, apparently know little more about the care of milk than the retail milk-dealers. If they did, they would not return the milk receptacles in the shape they are so frequently returned. There are exceptions among milk dealers and there are exceptions among house-wives.

Here in this city, this negligence is one of the most contributing factors to the supply of impure milk. If we are going to have purer milk, not only must we go to the producer and compel him to have a clean, well ventilated and well lighted stable, his cows clean, fed on wholesome food and drink, his utensils clean, etc., but we must also go to the milk dealer and examine his utensils after he has returned from his route. We must examine his wagons and see whether or not in the summer months, this milk is kept at the temperature where it will remain as good, or nearly as good, as when the dairyman brought it to him. We

must then go into the home, and I will say here, that in these cities where an educational campaign is being carried on among the housewives regarding the care of milk, they are getting much better results than they are in those cities where all the attention is paid to the man on the outside, the dairyman himself.

I can but echo the remarks that were made by the previous speaker, and I can but echo the cry of vigilance that your Health Officers will raise all along the line. But let us not return to the milk-dealer a filthy milk bottle and then criticize him when the next time he brings us filthy milk. The old maxim, a principle that I have heard at law, is, "He who goes into court must go with clean hands," and when we find fault, as I hope we will find fault until the milk is in such condition that fault cannot be found with it, we must remember that our first duty is to pluck the beam out of our own eye.

The Chairman: The next speaker on the program was to have been Dr. Guy L. Keifer of the Detroit Health Department, but he is unavoidably detained, and in his place Dr. Price will address you.

## CONTROL OF CITY MILK SUPPLY.

DR. PRICE, DETROIT.

Mr. Chairman, Ladies and Gentlemen:

It is with a great deal of regret that I have to announce that Dr. Keifer who is billed to speak here this evening is not able to be present. We all know that a man in his position as a physician does not always have full control of his time. He notified me that it would be impossible for him to be present and asked me to come down and say a few words about what the Health Department is doing in the line of obtaining a better milk supply.

I have been intensely interested in the address of Dr. Whitaker. I have read and reread his written articles and we have attempted to use them in carrying out his policies by distributing his ideas verbally to the milk men of the city, and I would dislike to take up any line of argument that he has entered upon because I would not wish to raise a dust, that might in any way befog the very useful address that he has given.

The articles written by him will be all the more valuable to me now that I have personally made his acquaintance.

About nine years ago while I was house-surgeon at Grace Hospital Dr. Kennedy secured for me an appointment on the Board of Health as Milk Inspector. I asked him what my duties were and his reply was that I should formulate a policy that would be productive of the most good to the milk consumer and the milk producer.

For about one and one-half years we did nothing more startling than to go about among the milk dealers to see what the actual conditions of Detroit were. Of course we spread what pointers we could and gave

suggestions to the dairymen, and we investigated plants and did what we could toward cutting off all the supplies of milk which would be detrimental.

At the end of that time we entered upon a campaign in court and after as much as six months' time spent on the first case we secured a conviction; that conviction was for the adulteration of milk, and while it seemed of great importance to us at the time, its importance was not so much the stopping of the sale of adulterated milk as it was that it gave the Board of Health, control of the milk supply, that the said Board might use the control toward influencing cleanliness and better milk generally.

In these one and one-half years we found we had to deal with three classes of milk dealers: 1. The store dealer, and there were about 1,200 of them—there are 1,500 now—we dealt with. We found that in the city stores from twenty to twenty-five per cent of the milk was adulterated by skimming or watering. Aside from that the milk pails in the store were not handled with any pretense toward sanitary precautions. They were allowed to stand in ice boxes in close proximity to vegetables, cheese and meat, whose odors they were allowed to absorb.

They stood on the floors and became receptacles of sawdust, etc. We did what we could toward instructing storekeepers, but we found that they were the hardest of all people to do anything with, for the reason that they were not interested in the milk business. They did not care whether they handled milk or not, but they did it as a convenience to their customers. We got through an ordinance requiring all milk dealers to come to the Board of Health for a license. No milk dealer will be given a license until he has presented satisfactory proof to the Board of Health that his methods of handling milk are proper, and with these store-keepers, we made them sign an agreement that they would keep the thing handled in a proper way. We also secured conviction in court against those who failed to comply with the ordinances, but it did not seem to secure results that were satisfactory.

Then the new regulation was enacted by the Board requiring the sale of milk in bottles, and I believe Detroit has the honor of being the first city to put through an ordinance of this kind.

Our licenses are issued on the first of May and the first of January we made a complete circuit of all the store-keepers, and told each man personally that he could sell bulk milk up to the first of May. Almost without exception they complied with our request all right.

I think on the first of May, 1905, when this ordinance went into effect not a dozen dealers were selling dipped milk. We went around to see how it was working and found the sale of bottled milk almost universal, we found once in a while, however, storekeepers who persisted in the selling of dipped milk, and we convicted them. On a few occasions when we found dipped milk we wasted no time in court but simply carried the milk out into the street and dumped it, which is the most effective means of regulating the supply.

This bottling has had the effect of reducing the adulteration from twenty to twenty-five per cent to one and one-fourth per cent.

So much for the stores. The taking of the handling of the milk away from the party who is disinterested in the business and giving it to

one who is interested in the business was found to work satisfactorily. There are about four hundred wagon dealers in Detroit. The milk inspectors are able to regulate these four hundred, but it is more difficult to regulate the fifteen hundred who are doing store business.

The next class of dealers that we found in this year and a half investigation were the foot peddlers who had from one to three cows usually kept in the back part of their yard and what profit they could get out of the milk was clear gain to them, and it was usually gotten at the expense of those qualities which are desirable in milk, they had such a small business and their profits are so small that they cannot afford to keep up-to-date appliances which make for sanitary milk.

The wagon dealers, of which there were about four hundred we found had not been regulated up to that time. We found that they were handling milk in a horse barn, in the living rooms and that they had, some of them, practically no covers for their milk, handling and bottling it in sheds with the door open communicating into the stable. We tried to advise them along the lines that had been suggested by Dr. Robison and Dr. Whitaker, we tried to use the pamphlets, we have tried to pattern after the views received from them, we carried out as I say other pointers given in these pamphlets and advise the wagon dealers as to what changes could be made for the betterment of their milk supply. We found that we had such a big proposition and so many of them were not right that we found it necessary to make arrests and bring into court about thirty every year, but I can now report that there is not a place in Detroit which is doing a wagon milk business, which has not the regulation milk house; that is, it must have a place separate from the house and barn, no connection directly or indirectly through another room into the barn. It must have a cement floor with sewer connection; it must be properly ventilated and lighted and next year probably screened. There is not a man doing a milk wagon business in Detroit now who has not such premises for conducting his business in.

About three years ago we deemed it advisable to make a campaign through the country and as we had no available man to send out, our Health Officer called upon the state and Messrs. Haven and Deer outlined a policy for us which we have attempted to put into practice with the new inspectors. As there were quite a number of men who brought milk into Detroit we went to work with the milk men. They did not want to have any trouble; indeed we are all working for the same purpose, and that is, the cutting down of this infant mortality. That is certainly an object and a common ground upon which everybody can get together without any trouble at all. There are suggestions which we have found it necessary to make to a large number of country dealers, and our inspectors are not trying to put them out of business provided they are willing to meet us in these recommendations.

Please permit me for a few moments to give you an example of how far we will go to get together with the country dealers if we can. Along about last June one of our country inspectors came to me and told me that he had continuous trouble with one particular farmer who persisted in ignoring all his instructions and there was nothing left to do but to dump his milk. We did not want to do this without giving the man every chance possible and so the next morning three of us went out to

see him, a distance of about fifteen miles. We went to his home and in entering into conversation with him we told him that there seemed to be some controversy between him and the inspector and we had come out to see if the matter could not in some way be fixed up, well, the result of it all was, that the man not only agreed that he would comply with the regulations of this inspector but that he would try to see that his neighbors also would do the same thing. We came away from his place having won him over to our side completely.

Of course there are others where we are obliged to proceed summarily. One man in particular declared that he would never take out a city license, that we had no authority outside of the city of Detroit, etc., but the next morning we went out and dumped 330 gallons of his milk into the sewer and since that time we have had no trouble from him whatever.

There is one thing that has not been touched upon tonight that I would like to emphasize just a little, and that is, in regard to what the Health Board is doing toward the regulation of milk supply, by looking after the character of the men who are engaged in the milk business. Every time I have gone into court on a case for unsanitary handling of milk I have preached that the person who was being tried was an unfit person to carry on the milk business, and one of the judges has fallen into the use of that expression, when passing judgment on the accused.

Now if we could only get the right men into the business; men who would clean up their stables, men who would be careful in seeing that their utensils were in a perfectly sanitary condition etc., there would not be the necessity of men attending meetings like this and urging this matter. I have no doubt at all that as soon as we are able to get the right man in the business, our milk supply will have very little that will be open to criticism.

There is one other thing that the health officer, Dr. Keifer, is endeavoring to do at the present time, and that is to establish a Commission for the examination of milk men. That is, along the line of just what I have spoken—to get people into the business who are really fit and proper, and that other persons who are unfit for business may be weeded out.

In conclusion I will give you briefly, figures to show the decrease in the mortality of infants in Detroit, since we began this crusade in favor of better milk. Nine years ago the population in Detroit was about 300,000. At the present time it is between 428,000 and 435,000. Notwithstanding the great increase in population for the year ending June 30, 1909, fifty-seven less children died in Detroit under the age of five years, than died in the corresponding year in Detroit 10 years ago.

#### DISCUSSION.

Chairman: Mr. Hadsell of Troy, is down on the program to lead the discussion of this subject and we will now listen to him.

Mr. Hadsell: I think the two gentlemen have covered the ground almost entirely, and there is therefore very little to say. I am a producer of milk, and have been to quite a large extent. The thought occurred to me, however, since this discussion has been going on here this

evening, how is this knowledge that we have gained going to be disseminated.

In putting questions concerning producer's methods the people raised their hands, and I was surprised at the number that were producing good milk. I dare say that a very large percentage of the audience present are producing milk of a high grade, and are not particularly benefited by the instruction that we get by attending this meeting.

In regard to the consumers' side, I do not know much about it. When the milk leaves the dairy it is supposed to be sanitary. After it is put on the car and leaves our hands, we have no control and it is then up to the dealer.

In this time of the agitation of high prices we hear much said of getting rid of the middle man, but we don't hear anything said about getting rid of the milkman. He is a necessary adjunct to our business. We must have him. It is for the milk dealer to be posted concerning the place where his milk is produced. I have sold milk in Detroit for a number of years and during that time I have sold to three different dealers, and but one dealer has been out to look over my premises.

Would it not be well for the milk dealers to take an examination as well as barbers and others and post themselves concerning the best methods of producing the milk and then have the board of health hold them responsible for the milk after it leaves their hands and is distributed? The gentleman preceding me remarked that there was no milk being dipped in the city; that, so far as he knew the milk was being handled in a reasonably sanitary manner. Now I just want to say that I had occasion last May to go to a place where they were selling milk, 10 cans a day, or about 100 gallons. The woman was doing all the business. There was no partition between that room and where three horses were standing; no ceiling to protect from the hay overhead and the dust and dirt over the hay could sift right down in the room. That woman was straining the milk. The man had just come in with ten cans of milk from the depot and I saw her put her dirty cloth over the can and strain it through, and then wrung the cloth into the can after the milk was strained.

I don't care how pure milk may be when it comes from the cow, it certainly is not very clean after being treated in that manner. Occasionally the papers are full of scare head articles about the uncleanness of the milk supply, a few feeble efforts are made to rectify the condition and then things are very liable to drop right back into the old rut.

There is a great lack of any desire on the part of some milk producers to live up to what light and instruction they do have. We want some method of getting the proper instruction to the milk consumers as well as to the milk producers, I don't think there is one-half dozen consumers of milk in this room and what good is all this talk if the persons who need it are not present to hear it. We are educated by the bulletin, and farmers are enthusiastic about producing this sanitary milk; they attend institutes and lectures by those who are sent out under the direction of the state and there is no question but so far as they are concerned the production of a better quality of milk is obtained. Nevertheless, what are we going to do about getting this in-



formation to the consumer? How is he to be taught except what he sees in the bottom of his bottles? I don't know of any way and the thought occurred to me if the dealer who takes our milk is held responsible for it after it leaves our hands, until it goes to the consumers—whether they put it in the ice box or out the windows with a screen around or not, of course lies with them—but they should be educated to keep it in the same sanitary condition that the producers and dealers are expected to keep it in and thus maintain the high standard necessary to make it what it should be as an article of diet. I don't know as I can say more, but in closing I would like to say that question of bottles is one of a good deal of interest to me and it is to every milk man. I know of one grocer who lost 1,400 bottles in ten months through being lost or broken or stolen. I should like to have bottles that are strong enough to carry milk and at the same time cheap enough to throw away when they are used.

Mr. Bartlett: This question is one that comes very near to my heart.

I have been a milk producer a good many years, and a milk consumer all my life. At our home in Pontiac we have sold milk for twenty-two years without missing a trip. We know something about the experiences with the average milkman. In our town the milkmen come into the city in the summer early in the morning, perhaps at five o'clock, before the patrons are up, and of course leave the milk on the door-step and take away the bottle that is left there for them. In many cases it has been brought to my knowledge—indeed I have seen it myself—where the milkman returning home just after noon saw the same bottles still on the door step in the sun. We were required to bring that milk to our customers at a temperature of forty degrees. Now, gentlemen, the feeling of the milkman is easy to understand when he sees his customers leaving the milk in the sun until noon and after. It seems to me that the milk inspector and the health officer should begin a campaign of education among the milk consumers in the city.

Another thought, we had some experience in Pontiac the last year that has not been real pleasant. We do not believe that it is the right thing for the milk inspector to go into a dairy room where the owner has done his very best to comply with the instructions in producing good milk, where the sign is up in the room, "No Spitting"—I say, I don't think it is the right thing for a milk inspector to walk right into that place, chewing tobacco and spitting upon the floor. (Applause). I don't believe that the dairyman should be required to ask milk inspectors who come, to leave their cigar outside when they go into the milk room, yet such requests have been necessary when receiving visits from milk inspectors. I think that just a little bit of common sense, a little bit of judgment on the part of the inspectors to put in practice some of the cleanliness that they are sent out to enforce were exercised, it would be a good thing. In all due kindness to the gentleman who has just spoken, I have been very much pleased with his talk, and I believe he is a nice clean young man and so any remarks do not apply to him.

Selling milk from one to three cows—whether it is the milk from such animals that is responsible for the great amount of mortality, especially infant mortality, or not, of course I am not prepared to say. But I have seen cows in Pontiac from which such milk was sold that were

covered with manure from head to foot. The milk inspectors are after the milkman who is doing his level best to produce the right kind of article, and at the same time pass these fellows by whose milk is secured under such conditions as I have just described. What we want is to have a kind of equality in this matter—treat them all the same—get after the little dealers as well as the large ones, so that the average of the milk supply shall be made what it should be to meet the demands of a high grade product for the consuming public.

Dr. Whittaker: There is a chance for a whole evening's talk on that one point and that is, the perils to the milk business of running a two-cow dairy. The cows are usually filthy, the prices are cut, and they are a menace to every city in the country. In some places the inspectors have taken to looking after the one and two-cow dairies, and demand that they comply in every respect with the requirements of the law, or get out of business. It is hard to tell just how the matter should be handled, and the question is one that has not been satisfactorily solved up to the present time.

Dr. Price: We have only recently taken this matter up, it is to be our policy to refuse a license to those one or two-cow dairies, but they will be given warning to get out of the business before May, 1911, and after that time any man with a one or two-cow dairy that persists in selling milk under any other than the most approved sanitary conditions will be prosecuted.

Mr. Bartlett: Are these one and two-cow dairymen to pay a license and the store men too?

Dr. Price: Yes.

Mr. Haven: Does your ordinance require that the milk shall be delivered at 40 degrees or a lower temperature? I wondered if that was specified.

Dr. Price: The milk is usually delivered at about 40 degrees. However, I should think that it ought to be delivered at 30 or 32, if it was to set out on the door-step until afternoon, as referred to by Mr. Bartlett.

Mr. Warren: I have been in the retail milk business for seven years. We do not have to put in our milk at 40 degrees, but we do have to put it at 50 degrees. Just a word about instructing the consumer. I do not know how in the name of common sense we can do this, if we cannot get them out to the places where this instruction is given. You can print these proceedings, but there is not one in 10,000 that will read the report. It seems to me that it is up to the Board of Health to instruct the consumer just as well as the milk dealer. In our town they are continually after the producer, and they have done a lot of good in that line. The dealer also comes in for his share of the responsibilities, and he is held responsible for everything he puts out. If the dealer left the milk on the door-step and it became sour from exposure to the sun, it is not his fault. Personally I have taken every pains and have required my men also to do the same, to see to it, that this milk was delivered in just as good condition as it could be, and if the consumer could not save it, or had complaint to make that it did not keep, there was no alternative for him but to get another milkman. I do not replace milk of which complaints are made. I have been producing my own milk, and get a man to produce it the way I want it produced. I

want it kept clean; I want the stable clean; I do not care about his polishing the inside of the barn. I want the milk taken out of the stable just as soon as it is drawn, and I want it to test 4% or better. If I could buy that kind of milk I would never produce it; but as long as cannot I will produce what I put out.

We have had lots of trouble with stringy milk, and some say that it is caused by one thing and others by something else; but seven times out of ten it is caused by the consumer herself. We got over that when we bottled our milk. When I could show that the fault was hers, I could tell her how to prevent it. The first thing necessary is to get them to say that they will listen to what I tell them. They think they know and they don't know.

Dr. Hopkins: I was one of the dairy inspectors of the Board of Health, and I would like to say a few words here this evening.

Ladies and Gentlemen: I have been at this work for the Board of Health since one year ago last July. I visited last year 408 farmers throughout Wayne county and part of Oakland and Washtenaw counties. I am a veterinary surgeon by profession. I understand the conformation and the diseases of the cow thoroughly, and have been in practice 40 years, 30 of which were spent here in Detroit.

I started out with my mind made up that I had a pretty hard proposition to work against. Of course, being in the veterinary profession I had an understanding to a certain extent of the condition of a great many of the stables; after I had been out a short time, only a few days, I made up my mind that I didn't know as much about the conditions of the stables as I thought I did. I made up my mind that I was going to try to remedy the sanitary conditions of the stables and clean out any diseased animals from the herds that I could locate by a physical examination. I made up my mind also not to be arbitrary, but try to go on an educational line; to educate the dairymen up to the point where they would see for themselves what conditions ought to exist and I am happy to say that in the territory I have been in—and I have nothing that is east of Woodward Ave., there has been a hearty response to my efforts. When you talk about having inspectors enough—we should have at least eight more men in the field, but I find on going over some of my territory the second time, that there is quite an improvement. I also find that the majority of the dairymen that I have talked to are quite willing to take up the work along the lines that we are demanding for the sanitary supply of milk. One gentleman said to me along in October last, "When you came to my farm a year ago my place was not in a very good condition. I thought it was all right but you pointed out many things here that I little thought of. After you had gone I made up my mind that I would try to get them put up along the lines you had recommended. I have done that and now what do you suppose I get for my milk as compared with a year ago. Well sir, I am getting a cent a gallon more than I did then, and this, wholly because of my place being put in a proper condition."

I was very much taken with the remark of Dr. Waterman with regard to the cleanliness of a cow, and the clipping of their bags, that is the thing I have been recommending ever since I started out in this work, not only to clip the udder, but also from the hock around the

flank and back. It would be a very easy matter for you to keep your cows clean by doing that. You would not require as much bedding as you use in some cases. In some instances I found no bedding and the stables, of course, were not in very good condition where such was the case. By clipping the back and the quarters, you would be very well satisfied. Many farmers cannot understand why they have not adopted that system before when they find how satisfactory it is. There is one thing, however, about this milk inspection business, when I first started out some of the farmers had the bull dog and gun ready. Some of the women had their broom and rolling pin in easy reach, and I know what it is to encounter all of these obstacles, but I am glad to say, however, that within the last few months they are beginning to realize that the work is what ought to be done. Now I just wish to say a word to the milk producers. If you will look well to the cleanliness of the cows and the lighting of the stables, a large part of this milk problem will be solved. It is here where a great many farmers lose out. There are very few stables with proper light, and ventilation and drainage. A great many have a square gutter and can keep them ten inches high and that should be four inches higher than your floor, providing you have a gutter. You will find that you can keep your stables cleaner, and they will look better, and the cattle will be better by doing this. Another thing with regard to tying of the cattle. Where a man ties a cow by the neck or horns it is impossible to keep her clean. They must back away and lay down and they are laying down in their droppings. If you will put them in stanchion—there are stiff stanchions and chain stanchions—you will be able to keep your cows cleaner, and I have found that the farmers who clean out the old way and put in a stanchion have always been pleased with the change. I want to say gentlemen that when I come to your place I don't want you to think I have come to find fault. I am coming to your farm to educate you along lines that will be for your good. I don't want to be arbitrary and furthermore, I don't want to be insulted as I have been by some of the farmers. I don't like that at all; as I visit you from time to time anything that I can do or suggest to you or ask of you to do is going to be as much for your own good as for that of the consumer of the milk, and so in this way I hope to work in conjunction with you in a way that will be for the good and best interests of all concerned.

A Member: I move that further discussions of this subject be deferred and that we adjourn until tomorrow at 9:30.

Seconded.

Chairman: You have heard the motion. All in favor of it say "Aye."  
Carried.

Meeting adjourned.

## SECOND DAY, 9:30 A. M.

Mr. W. F. Raven, Chairman:

The Chairman: Before we take up the regular order of the morning we would like to have an announcement of the appointment of committees. They are as follows:

Committee on Statistics: Dr. Floyd W. Robison, Z. A. Carmen, J. B. Colvin.

On Resolutions: Dr. Geo. Waterman, C. S. Bartlett, Geo. H. Brownell.

On Entertainment: C. J. W. Smith, Harry Wattles, Geo. J. Yetter.

The Chairman: I just wish to say a word in regard to a banquet. We have always had a banquet in the past and the Supply men have usually put up for it. Now what are we going to do about it this year? Is it not a little out of place to ask them who have had to pay liberally for space in displaying their exhibits, to go to this expense? What do you think about it?

Dr. Niles: For myself, I think it is an imposition for the Supply men to furnish a banquet and to get right after the matter and to have it disposed of quickly, I move, that a committee be appointed to make the necessary arrangements for a banquet, and that each man pay for his own plate.

The motion seconded.

A member: I move an amendment by inserting that the price of each plate for the banquet be left to the discretion of the committee.

The Chairman: With this amendment I will ask if there is any further discussion? If not, all in favor manifest it by the up lifted hand.

It is carried.

I will appoint as such a committee: Mr. Gregory, Johnson and Vanderboom.

Chairman: There is a matter that it is now desired to bring before this body and that is the order changed in the by-laws of the constitution affecting the election of officers. These amendments have been prepared ready for presentation at this meeting and we will now hear them. Reading of committee report:

Amendments to by-laws:

Resolved that article 1 of by-laws be amended to read as follows and by adding sections 5, 6, 7, 8, 9;

Sec. 1. The election of officers shall be held at the annual meeting with the directors sitting as an election board.

Sec. 2. All nominations for the respective offices shall be made in open convention at one of the regular sessions to be designated on the official program.

Sec. 3. The secretary shall cause to be printed an official ballot which shall contain the names of all the nominees to be voted for under the heads of the office for which they are respectively nominated. Said

ballot is subject to the approval of the directors present. One blank space shall be left under each of headings of the offices to be filled.

Sec. 4. No member shall be allowed to participate in the election of officers who does not wear the official badge of the Association, and who has not paid his annual dues in advance. The presidents and secretaries of auxiliary associations who have paid the annual dues for such associations, in advance, shall each be entitled to one vote.

Sec. 5. The polls shall be open for two hours during the exhibitors sessions and the time and place shall be designated on the official program.

Sec. 6. The directors shall keep a poll list of all the members voting and at close of polls shall immediately canvass the vote and announce the result thereof in open convention at the next session.

Sec. 7. The person receiving the highest number of votes for any office shall be declared duly elected to said office. In case of a tie vote for any office the same shall be decided by lot. All vacancies shall be filled by the president until the next regular election.

Sec. 8. The election for the year 1910 shall be held under the above rules except that nominations shall be made first in order of business, Wednesday P. M. session, February 2 and the polls shall be open from 9:30 to 11:30 A. M. Feb. 3, 1910.

Sec. 9. If there is one candidate only nominated for any one office the rules may be suspended and that candidate declared elected to that office.

Upon motion duly seconded the by-laws as amended were unanimously adopted.

Chairman: There is one paper left over from last evening:

## "IS THE SANITARY DAIRY ALL THAT THE NAME IMPLIES?"

BY DR. ORTON OF PONTIAC.

We will have that now, if Dr. Orton is present. No response being made the chairman continued. If Dr. Orton is not present we will go on to the first topic for this morning.

## "BUILDING UP A DAIRY HERD."

MR. N. P. HULL, DIMONDALE, PRESIDENT OF THE FARMERS' NATIONAL DAIRY ASSOCIATION.

Mr. Chairman, Ladies and Gentlemen: I just want to take a moment of your time this morning to say a word on a matter a little foreign to the subject I am discussing. Last fall over at Milwaukee, at the National Dairy Show, steps were taken to organize the *National or International Farmers' Dairy Association*. Resolutions were presented and

adopted and an organization perfected, and it happened to be unfortunate enough to elect your humble servant as President. Now I want to say that I believe in that sort of organization and I believe that you do. I notice that when the farmers met the hall was not half full, but when the National Creamery Buttermakers met they had a full room. There are many more dairy farmers than all these other classes, and they should be a member of such an organization. They need to know more about their business, and they need the instruction and incentive and inspiration such a movement would give so that when we have a national convention we could have a representation of dairy farmers. Mr. Rabild was elected Secretary. Prof. Hills of the Vermont Experiment Station, Mr. Glover of Hoard's Dairymen, Mr. Shilling of the Minnesota Dairymen's Association, Prof. Frasier of Illinois and Mr. Leon S. Merrill were elected directors. We met and talked this matter over as to how we could get a representative gathering and the next meeting is to be held in connection with the National Dairy Association. We concluded to ask the President of every dairy association to appoint ten delegates. We want all the dairymen from Michigan to be present and we think a very large share of them can be present as the associations will meet at the next Dairy Show.

It has been my good fortune to address dairymen's associations and other gatherings and as I have presented the matter they all seem to take kindly to it and have appointed their delegates. I am sure that this can be made the best and largest Dairymen's Association in the country. The best thing about it is that it will allow such a liberal representation, and I hope that each one appointed will go there. The question has been asked, "Who will pay the per diem traveling expenses?" Of course, this will be born individually. We have put our membership low enough, 50 cents, so that everybody can join the association and it is worth your time to go, and I hope that we may see a very large representation of Michigan Dairy Farmers at that meeting.

I want to tell you a story. There were once three friends who went out for a good time and while they were sitting, dining and wineing under the generous portions, their hearts were softened and one of them seemed a bit sober. "What's the matter" said one of them. "Well I don't mind telling you that I don't believe that I am as good to my wife as I should be; I don't do as she asks me to do at all times." Then his companion spoke up, "By jove, I am not as good as I ought to be to my wife, I have been thinking of it quite a while and I would like to turn over a new leaf." On hearing this the third spoke up and said, "I tell you fellows I fell just that way myself, and now I would like to make a proposition." "The first one of us that refuses to do as our wives asks us to do will pay for this supper. They agreed. In due course they went home. The first one slipped up stairs, and in the dark tipped over a chair. This woke his wife up and she spoke rather sharply, "There now, you had better tip over all of the chairs in the room." He proceeded to do so and when she remonstrated at the noise and disorder he simply said he was doing what she told him. The next fellow broke a glass out of the window by accident and his wife said to him, "You had better break the glass out of the door," and he promptly did so. The next fellow stumbled just before he reached the

top of the stairs and fell down waking his wife. She was not kindly disposed to such late arrivals of her husband and she snarled out to him, "There now, you had better fall down stairs and break your neck, and he replied, "Dammed if I will, I will pay for the supper first."

Now as to the subject for discussion, "Building up a Dairy Herd." It seems to me that is a topic in which a great many should be interested. It has been my good fortune to be going up and down this state of Michigan in Farmers' Institute work and as a member of the dairy and food commission have visited many communities. I have inquired pretty thoroughly into the dairy conditions in Michigan and I want to say that it is one of the burning questions among farmers—the "Improving of the Dairy Herd," and the reason for this is that your dairy herds are not as good as they should be. I don't know of any dairy herds in this state as good as they should be. There are a lot of good ones in this state and a lot more no where near as good as they should be. To bring this proposition before you that we may see the essentials of this thing, because they are mighty essential, I want to call your attention to the fact that in feeding milking cows, we are putting our lives into this, and the commercial value of our pay is measured by what we get out of it; and I think our lives are of sufficient importance that we should get the most possible out of them.

We had an illustration over at Milwaukee that was of considerable import. Sixteen cows were selected from a hundred, all fresh about the same time and these were taken by themselves, milked and a correct record kept to show up the value of each cow's testing and as to rations, and these sixteen cows were as good as the average sixteen cows in Michigan, in fact the idea was to get cows that would be about the average. The milk from each milking was weighed and a perfect record kept of every detail, the care, the feed, etc. The butter from each cow was put in a separate jar so that it could be known exactly how much butter each cow was making. There was one cow in the lot that was a fine looker, she was round, sleek looking and everybody remarked what a fine looking cow she was and many said that if they were going to select a cow she would be the one they would take. Perhaps if judgment was passed only on looks she would have been selected, but in the test it was shown that she was fed fifteen cents worth of feed a day and she returned for every dollar's worth of feed given right around ninety cents. There was another cow in the herd with an angular look—in short, a regular dairy type of a cow. She was fed the same as the others. Her rations cost 14 2-7 cents per day, but she returned almost \$2 for every dollars worth of feed.

Now one of these cows God Almighty made for beef and she fulfilled her mission. That the other converted the feed given her into dairy products and returned \$2 for every dollar's worth of feed is the interesting point to every dairyman; and the fact that the other consumed more feed each day than this one and yet returned only 90 cents for each dollar's worth of feed given her. Now the point; supposing this to be a representative herd, such as any farmer might have, and 7 of 16 cows were like the fine looking one. He could sell out all of these 7 and the remaining 9 would make him more money in a year and a half than he could get from the 16 cows in two and one-half years.



A member: If you had fed these two cows the same on different rations, would it have made any difference?

Mr. Hull: They were both fed according to Prof. Hecker's standard; that is, so much protein and carbohydrates for each pound of milk. They were fed so as to meet these requirements.

A member: This cow of a beef type should have entirely different rations from the cow of the dairy type.

Mr. Hull: Why?

A Member: Because of the difference in the requirements.

Mr. Hull: That is just the point—one cow converted the food into milk and butterfat, the other into flesh. Now had the man taken from that herd of cows the seven poorest, as I stated a moment ago, and put in their places as good cows as the other nine averaged—and I repeat there were no especially good cows—he could have made as much in dairying in one year with the other sixteen as he would make in two and one-half years with the present sixteen. Here is one of the reasons which I give to you for the essentials of improving of the dairy herd. And while of course the two weeks that this test was on is not absolutely conclusive proof that this is what these cows would do under all circumstances, yet I am venturing the assertion that from my knowledge of dairy conditions in this state and adjoining states that these sixteen cows and that of the average sixteen cows kept in Michigan were like these, and if the farmer knew it and would weed out those that were not what they should be he would make as much in one year as at present he is making in two and one-half years. Gentlemen, is it not worth your time and effort to look into this matter and find out whether or not a part of your herd is not losing you money, and whether or not by making a change such as I have suggested, you cannot largely increase the yield from your dairy herd? There is not a man here in this room today but what believes that if we farmers and dairymen all knew what our cows were doing, we would all be the better off financially for the change.

But you say "we cannot get these good cows." Well, granted that you cannot, don't you see that even then you would be ahead to weed out the seven unprofitable cows of your herd, you would make as much with the nine in a year and a half as you would with the sixteen in nearly twice the same.

There is much importance attached to this matter. To the man who really believes that there is a value to this life and that it is his duty to get as much from his efforts as possible, there is no question but what the improvements of the dairy herd is one of the most important propositions confronting the dairy farmer.

First of all, we must have an ideal to start with. I will suggest that you make that ideal right. I am not here to say what your ideal shall be, I would, however, recommend a distinct breed of cows. I do not care whether your idea is Holstein or Ayrshire or Jersey or a different breed that you like, but they should be dairy bred cows. Some may say "I have a lot of faith in a dual-purpose cow; I can take these milk strains and I can get some wonderfully good cows." No question about that. I might just relate an incident of a farmer who wanted to improve his herd, and so he looked about and after spending considerable

time and money, he came to the conclusion that he would give up the job. He said, "I wanted a sire and I wrote and asked every breeder in Michigan for what I wanted." "Yes, we have the milking strain" they replied, and then said he, "I visited the milking strain herd and spent over one hundred dollars traveling from place to place and finally at last I found one man who had a real milking strain and that he had secured it by selection and by breeding away the beef type."

My friends, if we want to start with a dual purpose cow, perhaps if we live long enough and are intelligent enough, by selection of the very best we will after generations have from the dual purpose cow a dairy breed; that is, we will have the conformation of a dairy animal. There is no getting away from that. Now just let me ask you a plain, straight, honest question. Why not profit by what some other man or set of men have been doing for the last three or four hundred years, and start where they left off instead of going back and starting where they commenced. Have the dual purpose cow if you want her, but you won't get as large profits as from the dairy breeds.

What you should do is to pick out that breed of cows that looks the best and is the best adapted to your particular line of work; pick her out and the better looking she is the better you will care for her, but pick out a dairy breed. Then you must remember that there is a lot of good cows in the distinctly dairy breeds and there is a lot of almighty poor cows. It is not only that you want a cow of the dairy breed, but you want a good animal of that breed.

Now what is a good animal? To my mind the best animal on my farm is that cow that will take one dollar's worth of feed and convert it into a merchantable product and yield the most of it. When with one dollar's worth of feed she can produce two dollars worth of milk, she is a good cow. I like to look at a nice dairy cow; looks are considerable, but there is a little more fun in it when she makes me a good profit.

How are you to know? There is but one way to know and that is to know. Back a few years ago in the Congress of the United States they were discussing the resumption of specie payment, and there was a good deal of discussion about it; and finally one member asked how it was going to be done. Mr. Sherman, who had the matter in charge, replied to him, "The way to resume is to resume."

How are you to know about the cows? Why, just know. Know that it costs to keep that cow. Find out what she pays you in a year, take the cost from the receipts and that will tell you the profits. Keep the cows that give the most value in return for their feed.

Now another reason why you should test the value of your cows is the fact that the best cow is apt to give you the best calf. This is the great law of feeding, that like begets like. Of course breeding is not an exact science, but the best cow is the most apt to grow you the best calf. If you keep track and know which is the best cow and then save her heifer calves they will in time provide you with a herd that will meet your ideal. But do not take it for granted that because her mother was a good cow that the calf must be good. Know it. The great mistake of dairymen is that they do not know their business.

Not long ago in Ohio the President of a society said to me, "We have

one of the best dairymen in the country and I should like to have you meet him, he will be here," and I did meet him, and I found that he kept a precise account of what everyone of his cows made and he showed me the figures. That book showed that his best cow produced over 14,000 pounds of milk. Now that is not so very remarkable, but the remarkable part of the figures was that while his best cow produced over 14,000 pounds of milk, his poorest cow produced over 10,000. There are not very many herds that produce cows like that. I looked the figures over and I found that the average of his whole herd was over 12,000 pounds of milk per year. I could hardly believe it and I told him so, and so I went with him to his home and I saw the cows milked and tested and then I believed it. This man twenty years ago was working for an old man on the farm and the old gentleman said to him "I want to sell you this farm." The young fellow said to him, "Don't you know that I have just been married and all that I have is one cow and \$125, I could not think of buying this farm of you." But the old gentleman said to him "You have it in you to make a dairy farmer and you can pay for that farm as you can." Well, to make a long story short he took that one cow and bred her to the best sire that he could get, often times taking her in a wagon as far as twenty miles from home for that purpose. He always knew just what each cow gave at each milking, and he has a record of this for twenty years. When this cow had a heifer calf he kept it and tested it out. If it was a good calf, if it came up to the standard it was retained. If not, it went to the shambles. He would not have any cow on his place that did not come up to this standard. Last year the average from each cow was \$160.14. The calves sold from \$40 upwards, an average of \$59, making \$219.14 from each cow with a feed bill of \$55.

Now when you want a herd that will make you money you must do as Mr. Standish did, he is the gentleman in question. Get the best possible sire, breed to that sire, keep the heifer calves from the best cows, know what these heifers are doing and keep them if they are good enough, and if not sell them.

#### DISCUSSION.

The Chairman: Mr. T. F. Marston, our president, is scheduled here to lead off in this discussion, and we will now hear from him.

Mr. Marston: I would like to know how any one can discuss Mr. Hull's address.

I am not going to attempt to; and all I will say to it is Amen.

A Member: How many cows does Mr. Standish have in his herd?

Mr. Hull: Ten; that is his limit.

Mr. Read: Having visited the herd of Mr. Standish and taken out 3 of his best producers, I can confirm all that has been said of him. I want to add this word that while the most of the producers of dairy cattle are anxious to maintain conformation, Mr. Standish has one object,—to get production; and his cattle today are not the kind that would please the eye, but they do the trick also.

The Chairman: I think we are working altogether too much for conformation and too little for production. I am a good deal like Mr. Hull,

I don't care so much how a cow looks, as I do what she produces, and the profit she makes me.

Mr. True: You have heard what Mr. Marston said, I have not anything more to say than he did and that is Amen. I don't believe that any of us can say anything in addition to what Mr. Hull has said, and I don't wonder, for every word of his talk is gospel truth. We must stand on that or lie down and quit the business.

Mr. Vanderboom: I would like to know whether you would consider it so important to weigh and measure and get the exact results of every milking and feed, or whether it is fair enough to the average man in the business to measure once a week and test once a week and get the average in that way?

Mr. Hull: I think for the average man that once a week is sufficient. In my business we weigh the first and the 15th of the month, and we take this as the average weights. We came out within 200 pounds of the actual amount of milk sold.

Mr. True: It seems to me the question is whether it pays. I have not missed weighing the milk for 15 years. I think it pays me. My men will all notice if the cows are shrinking. They also notice if they are increasing, but this they cannot do if they are not by experience trained, to see if there is anything wrong with the cow. They will notice if a cow gives a pound more or less today than yesterday. You cannot go around and look over every cow in your herd to discover from the animal herself, whether there is anything wrong. If there is anything wrong it will show quicker in the milking supply than anywhere else, and you can immediately look for the cause. So far as determining the average yield of milk, it will perhaps be all right to weigh at longer intervals, once a week or twice a month, but when it comes to looking after the cows' physical condition the answer is given more quickly and more surely when the milk is put on the scales and weighed than in any other way.

Mr. Marston: I think that it would be a good idea to pass a resolution that the matter of cost of milk production receive more attention from our Experiment Station and let the results be put out in bulletins something as Mr. Hull referred to in his account of the test at the Dairy Show.

Mr. Chairman: We judge a cow twice; once by the special judge and next by production and the cow that scores best is the one that we want. I would like to ask the farmers here to say how they want their cattle judged. And then ask the State Fair Board to use this as the basis for judging cattle.

Mr. Bartlett: When Mr. Hull stated that he believed that once a week or twice a month was sufficient, I had an awful itching—I wanted to emphasize the thought presented by Mr. True that the hired man gets interested in the weighing of the milk, and he watches the cows as carefully as possible. I haven't had a man in my employ that didn't get interested in that work. It pays because the hired man gets interested in what the cows are doing. If there is any change from normal they quickly call my attention to it, and we can seek to correct anything that is wrong, and do it at once.

Mr. Rozema: I think it is right to weigh every time. It has been

my experience that the hired man gets more interested in these cows through this means than any other way.

Mr. Wattles: In regard to weighing milk, I think as Mr. True, that we can make money by weighing every milking, perhaps for 8 or 10 cows, but we have 40 to 45 cows and we have found that when we only weigh once in say two weeks, a cow may drop two or three points and the fact may not be discovered; but when milk is weighed every time if is taken, any change in the yield may be noticed. That is not all: If the milk is not weighed right along, the milk from two or three cows would be put in one pail. If you want sanitary milk take that milk out just as soon as you milk one cow and bottle it and care for it as it should be.

Mr. Elliott: For the last few years I have not weighed my milk although I used to do so and believe it pays.

Mr. Wicks: I am of the opinion that it pays to weigh milk and weigh every milking.

Mr. Hull: I would agree perfectly with this. The boys keep check on the cows and when they weigh often there is a special interest to have their cows keep up and not drop off. The question is, what are these cows doing? We have some good milkers. The scales hang there and most of these cows have their milk weighed twice a day. This cow for instance shows up a pound or two gain and you talk to your hired man about it; another cow loses and immediately an inquiry is made into the cause. I will guarantee that my men can tell you the average of every cow each day of this winter. But we make a record of it once in two weeks and from that result we take the facts with regard to the yield, or enough of them to satisfy us as to just what our cows are doing, and that after all is the real practical thing considered.

Mr. Lillie: I don't think that I can add anything of particular value in regard to building up a herd. I believe that the true test of what a dairy cow is, what she can do—not what her looks are, or what particular breeding she is. He has given us right principles for selection, we could have carried the argument along different lines still further and perhaps it might be more profitable than some other lines, but there is a good deal in breeding as well as in selection. Selection is only one part of it, but the true basis of selection is what the cow does more than anything else. I know that a great many breeders are breeding type and in a measure that is right. We want uniformity in the looks of our herds, especially pure bred herds. I think it pays a man to have these in a measure in view, but I do not believe we should discard good producing cows because they do not conform to his idea of particular type. And yet breeders know that you can not ignore uniformity and type if you want to fix the type of breed? Mr. Hull might have given at talk on selection of the sire which goes along with the selection of the dam and that is of much importance when attempting to build up a breed for production.

The sire should be tested in the same way that you test the dam, on the same principles that you know what he does. There is more to this question than many of us appreciate. Too many of us are breeding, to young sires of unknown merit—nothing back of them but their breeding, and in this we make a mistake. On the other hand, many a young

sire has been sent to the shambles when nothing is known about his value. This runs right along with the principal that we want to see established, that of cooperative breeding, community breeding, so we can test these sires before we approve of them. We cannot tell the value of a sire until he is four years old, and many have gone to the shambles before that. I heard Dr. Watterman tell the other day of an experience that they had, when found that certain sires and heifers were uniform and phenominally good ones. But the sire that got them was only kept until he was two years old, but the heifers when they developed into cows proved to be exceptionally good ones. He would have paid almost anything for that sire, but he was gone, like many other noted sires—found to be so after they were dead and gone. We are not breeding in the right way. There is too much individuality about dairymen. They should cooperate together on a broader plan so that we can have unity breeding, test the sire on the same principle that we are testing the dam, in order to get the best and most rapid development.

Mr. Hanford: I weigh every ten days because ten is more easy than any other number to add. I would like to ask if anyone has had experience with weighing machines that register the weight? I think that would help very much in the weighing up of the milk quickly.

Mr. Hatch: All that is necessary with the weighing machine is to hang the pail on a hook and a little hole is punched in sheets and in this way the register is made.

Mr. Trail: I didn't get much satisfaction out of the scale. I could not make the sheets tally with the pounds on the scale. It seems to me that the Dairymen's Association should have something to do along this line that would give suitable results and the Fair Boards should take the matter up and get what is wanted, it would be appreciated.

Mr. Johnson: I would suggest that the committee on Resolutions formulate a resolution along this line, and if same be presented to the Experiment Stations through the National Association of Dairy Instructors to work out this problem by making accurate measurements of large producers so that some fixed rule of type that will harmonize with conformation and production, will be established. As yet we are altogether at sea.

The Chairman: The next topic on the program for consideration is "Organization," by Mr. S. B. Shilling, President of the National Dairy Union.

No response was made to the call, so the Chairman called for the next topic on the program, "Cooperative Bull Associations," by Mr. W. F. Raven.

## COOPERATIVE BULL ASSOCIATIONS.

MR. W. F. RAVEN, EAST LANSING.

Mr. Chairman. Ladies and Gentlemen: What we want is some method by which we can improve our dairy cattle, and do it by working in unison. If Mr. Hull is to discuss the building up of the dairy herd by selection; Mr. Shilling is to discuss the improvements of the dairy herd by organization, and I am to discuss the problem of building up the dairy herd by better breeding—we would all be in line for what is necessary to make the dairy industry what it should be and what it must be, before it yields the return that it should yield.

Now I wish to speak this morning on the topic of building up a dairy herd by better breeding. If we can get better breeding along with testing our cows, there is no doubt that in a very few years Michigan will stand away ahead of any state in the Union in the matter of dairy cattle, because Michigan is the only state that has taken up these two propositions and are working them together. And I say to you that it means much to the improvements of dairy cattle.

When the last census of Michigan was taken, it was found that there were 27,800 sires in Michigan which the owners valued at \$28.55 each. The same census showed that there were 33,000 three year old steers that the same farmers valued at \$33.88, making a value of \$5.33 more, placed upon three year old steers than upon their sires. When this was found to be true, it was something that the farmers themselves did not believe, but these figures are certainly what were given to the census department by the farmers themselves.

It was shown also that about 80% of all the cattle raised in Michigan were grown on farms that had from two to ten cows, and that over sixty per cent of these farmers were breeding these cows to cross-bred grade and scrub sires, and this meant that the cattle were rapidly going down hill. When that was known to the Legislature they made an appropriation for the purpose of improving the livestock of Michigan. This was turned over to the State Board of Agriculture, and they began a systematic method for the improvement of livestock. They began buying forth cows with no breeding, the one requirement of these cows being that they were to be between four and five years old, and in health. They were divided into two herds, one a dairy herd, the other a beef herd. Then they began breeding them, breeding for four years, five to scrub sire, five to a Holstein sire, five to a Jersey sire, five to a Guernsey sire, and each year changed these cows so that each year each cow had been bred to a different sire. The same course was pursued with the beef herd, so that at the end of four years each cow would have been bred to each of the sires.

The best cow in the herd produced 7,834 pounds of milk. She made a gross receipt of \$98, taking the actual cost of feed, produced a net profit of \$62.00. The poorest cow in the herd produced 1,205 pounds of milk during the 12 months, which made a trifle less than 50 pounds of butter.

She failed to make enough with the selling of her calf to pay for her feed—ran in debt \$14.

In the beef herd when the calves from the best sire was a year old, Prof. Shaw invited feeders to go into the herds and put a value on the calves. The best calf in the herd weighed 771 pounds, and the feeders put a value on it of \$4.50 per cwt. The poorest calf weighed 112 pounds less or 669 pounds which the feeder declared worth \$2.48 per cwt. It was found that the best calf came from the Hereford sire, and the poorest calf came from a scrub sire.

The farmers in Michigan have not patronized the pure-bred animals of this state as they should. They have been unwilling to pay a trifle more for a first class sire than for inferior sires, and so have failed to get the benefits that come from good breeding. When a man in a community is progressive enough to get a registered sire, his neighbors should show sufficient interest to make use of that better quality of sire. I was appointed field agent to put this method into practice over Michigan, and the object of it was to get men breeding one kind of cattle; to get them to use the same breed of sires upon their common stock, in other words, to get the owners of 120 or more cows to agree upon a breed of cattle and when they do agree, to organize into a company or organization and purchase three or more registered sires, and place each of them over a group of say forty cows, and keeping them there for two years. Then change these to another group. At the end of four years change them again, and during that time they get the value of every sire in the association. If they get what proved to be an especially good sire, he could be kept for future use. By saving him and breeding him to the best cows in the different groups. There will be a very decided increase in the value of the progeny. This organization can be incorporated for thirty years, and this means that this breed of cattle can be maintained and improved right along and in time the very highest type of that particular breed can be had. This will do away with the idea so prevalent over Michigan of changing sires every year. By this method the whole community will become interested in one particular breed of cattle, and there is much benefit in this.

Several years ago the little city of Howell adopted this plan and took up the Holstein cattle, and today there is no place where Holstein cattle are worth what they are in Howell and it has all come about by taking that one breed and sticking to it and improving it.

In coming in from Kalamazoo I met a man who said he had spent over \$80 travelling about trying to buy some Poland China pigs, and he was then on his way to Saline. He said, "I am not acquainted with any one there who breeds Poland Chinas, but I know that years ago everybody there was breeding Poland Chinas, and good ones, and I do not believe that they are all gone yet. He went there because a few years before everyone there was breeding that particular breed of hogs. So I say to you that in every community where such an organization as I have outlined is a permanent factor, it will be known as a Holstein, or Ayrshire, or Jersey or some other breed, and these people in such communities will have calls for all the cattle they want to sell. This is the way it is at Howell.

Now this is a matter that is very near to my heart—this idea of



organizing into a Breeders' Association—for I am sure that it is one of the most potent factors in building up our herds of cattle, and make them in time valuable.

During the past ten and a half months I have organized twenty-two of these associations along the dairy breeds. I have but very little trouble with the breeders. For the breeders are not fighting one another. I was much surprised when I was in New York State to see the men there quarreling over breeds. Take any of the breeds—it makes little difference which of the pure breeds are selected but take that which is suited to the community and the likes of the people, and then let all pull together for the uplift of Michigan cattle.

Now the organization of an association of this sort does not cost you any more. You choose your own breed, buy your own sire, buy him where you want to, and pay the price you want to. There are some special rules—they must be tuberculin-tested, and another is, and that is optional, the herd in which the sires are kept must be tuberculin-tested. The first is obligatory, the other optional.

I find every day as I go up and down the state that more men are interested in this movement of improving livestock, and I do not know of a method or manner in which we can improve it better than I have here suggested and outlined.

#### DISCUSSION.

Mr. Clapp, Northfield: Mr. Chairman, it is a surprise to me to be called upon to talk on this question of Association breeding. I haven't had any experience, but I have observed some things in going about the state in regard to building up the dairy interests in different parts of the state. I was interested in what Mr. Hull had to say in regard to selection of best animals, and we have found this, that where the interests of communities have been concentrated upon one breed, that the improvement has not only been considerable, but very great. The increase of the value of the animals kept in the communities have been such as to encourage further effort along the same line.

In regard to the selection of sires, I believe that is of first importance, as suggested by Mr. Hull. There is an ancestral influence that should not be overlooked. The Holstein cattle have been bred along one line, for two thousand years, and that is for the production of milk. Now, if the Yankee, by his ingenuity is able to devise means whereby these cattle when they come into this country can be improved, so that they will give better results than in their native country, well and good; and I want to say that I think we should be very proud of what has been accomplished in this direction. So, is it not far more sensible, instead of going to cross-breeding back and forth, that we go right on in the line of a better development of what we have, follow right along in the same line? I think that Mr. Raven suggested the idea of making known the results of breeding haphazard, first one breed and another. I quite agree with this, and I think the farmers of the State should be made familiar with the evil results of such breeding. It has been my privilege to talk to a good many Farmers' Institutes in regard to this, and I have considered it my duty to emphasize this point. When you select a breed,

stick to it. Just as soon as you get another breed, you destroy what you have already accomplished.

Then another point, encourage the individual who takes up this breeding in communities to study his business, and do better by his animals than he has been doing previously. Let us remember that the breed is to be improved only under improved conditions, and that all improvement of animals in the hands of the farmers will first have to come through the improvement of the farmers themselves. There must be an elevation of his ideas; the standard must be raised; there must be an understanding of his business; he should study the laws of heredity. Then, when that is done you can depend upon it that there will be an improvement every year in the stock that these farmers are handling, and don't you forget it.

Dr. Reed: I have never had any experience in breeding, but I have some knowledge of the cattle interest in our community, and what right breeding has done for it, and that is one of the means by which Howell has attained its very pleasing notoriety at the present time. I am not egotistical, for it does not refer to me more than to all our good men who are engaged in this work.

Right here I just want to correct one statement of Mr. Raven—we not only have the largest number of Holstein cattle in Michigan, but we have today at Howell more breeders, or as many, of Holstein cattle, as there are at any place in the United States.

The community interests of breeding is one that should concern us even more than it is. The fact of discarding the sires before their progeny is tried out is one that has cost us, the breeders of Howell, (we are all one—we are all pulling together—there is no division between us—we are all pulling for Howell and the best interests of our breed there)—I say, it has cost us a very great deal, because some of the best sires we have ever had and that have left their stamp, have gone to the shambles before we knew what their progeny would be.

I cannot understand why these men in different parts of the state, men who are interested in the development of their own resources, and that of their community, should not have an interest common in this matter, and all unite in owning a better bull than any one individual would think he was able to own, and thus bring to them the custom and trade that will surely come to the center.

Some few years ago some of our good friends met together and conceived the idea of publishing to the world the fact that we have a good many registered cattle, and we issued a catalog. It fell to my lot to compile this catalog, and several thousand of them were sent out all over the United States and even to other countries. We have not been able to issue another. We have had all the business we could do without calling for any more custom. It is true that it is not only thoroughbred cattle that are called for, but grade cattle as well, and the demand for the grades has been greater than we could supply. Every few weeks of the year we ship from one to eight car loads of grade and registered cattle to different parts of the country, and our bankers and business men compliment us for the trade and money it brings to our town.

And now, I just want to say that this same result can be duplicated

anywhere in Michigan. When you go back to your homes, on your farms, and you conclude that you want to start an Association, just come together, and a man will visit you from the Agricultural College or elsewhere, and will assist you in the organization of those breeds that you desire. Then stick to the breeds that you desire, and you will get results that will be both gratifying and profitable.

Mr. Crandall: Mr. Hull, I fear misspoke himself or I didn't understand him. I got the idea that he advocated a cow that was a producer, no matter how she looked. I want to tell you that if the breeders of Livingston county, no matter what breeds they have, whether Holstein or Jerseys, had left that out of their effort, they would not have the trade that they now enjoy. There is not a breeder with any pride in his cattle but what wants his cattle to conform in general at least to the type of the breed. He doesn't want to breed from a cow that gives three-fourths of the milk from a hind teat, or has some other abnormal condition. She must be a cow that looks right when she walks into the yard. Buyers want cows that look right as well as produce right. I would not put a sire into my herd from such a cow even if she produced a barrel of milk a day.

Mr. Gilbert: When I was a boy, if you wanted to breed up your herd, you had to take the man's word for it. But now when you go to a sire, you have nothing to do only to look up the pedigree, chase that back five or six generations on both the sire and dam's side, and you can know pretty well what you are getting. So I trust that we will none of us lose sight of this, that we must keep our cattle registered, so that we can know just what the cattle are doing, and then breed up to the highest standard we can get.

The Chairman: It is a fact that less than one and one-half per cent of the cattle in Michigan are registered, so when a man wanted a purebred animal he may have some difficulty in finding it except in regular registered herd. It should be the aim to get a purebred herd of cattle, but the average farmer today is not capable of caring for purebred cattle. This is a pretty hard saying but I think you will agree with me that it is true.

Question: Which is the hardier, purebred or scrub stock?

The Chairman: The question of hardiness does not enter into the problem—it is the care that they need, and the average farmer will not give this.

Mr. true: One is just as hardy as the other. This is a bug-bear that ought to have been thrown out of our vocabulary long ago.

The Chairman: The time is now arrived for us to bring this discussion to a close, and if there is nothing further to offer, the meeting will stand adjourned until this afternoon session, and we trust that all will be present as there are matters of importance to come up for consideration in addition to the regular discussion of topics assigned in the program.

## AFTERNOON SESSION.

Wednesday February 2, at two o'clock.

The Chairman: Under the changes of the by-laws as adopted, the present way of electing your officers will be by open nomination here this afternoon. You can nominate as many candidates as you wish. The secretary is then instructed to have a ballot printed containing the names of these nominees, and during the Exhibitors' Session, the Executive Committee at the secretary's booth, will have a ballot box and ballots so that anybody can scratch the names of any that they do not wish, and deposit said ballot with the name of any candidate for the office you may desire. Under these regulations the nominations of your officers are now in order.

Mr. Hull: I move that the name of T. F. Marston, of Bay City, be placed in nomination for the office of President of this Association. Seconded.

I move that the rules be suspended and that the secretary be instructed to cast the ballot for Mr. Marston as President of the Michigan Dairymen's Association. Mr. Wilson, the secretary, so cast the vote in the presence of the Body, and Mr. Marston was declared duly elected.

A member: It seems to me that Mr. F. H. Vandenboom, our present vice-president should be retained for another year, and I move that the rules be suspended, and the secretary be instructed to cast the ballot electing him. On motion Mr. Wilson was so instructed, and he did so cast the vote, and Mr. Vandenboom was declared elected.

Mr. Wilson: I do not know but what it is a strange procedure after serving this Association for eighteen years as secretary, to place in nomination a man to succeed me, but my business matters have changed to such an extent that it is impossible for me to devote any time to the work in the way of an executive officer, and I am going to place in nomination the name of a buttermaker who has tried valiantly for several years to attain to this office. I think you are well acquainted with him, Mr. W. H. Bechtell. I move that he be placed in nomination for the office of secretary of this Association.

A voice: I move that the rules of this Association be suspended, and the secretary be instructed to cast the ballot for his election. Seconded.

Mr. E. S. Powers: In view of the fact that other candidates have been mentioned. I move you that the election of secretary be made by ballot in accordance with the by-laws.

A member: Inasmuch as all the butter makers and members of this association have been invited to be present, and inasmuch as Mr. Wilson has announced that he will not be a candidate for this office, and inasmuch as Mr. Bechtell has announced himself as a candidate and no one else has announced himself as an aspirant for the office, it does seem to me that it would be justice to elect all the other members as you have the President, and let Mr. Bechtell's name go on a ballot slip to be voted for.

A member: I rise to a point of order. The articles governing this body are outlined clearly, and since these members are already elected I don't see what consistency there would be in putting their names on the slips and ballot for them again tomorrow.

Mr. Wilson: I don't see how the secretary, sitting here and seeing the decision of the chair, can put these names on the ballot.

Following this discussion it was finally decided to let the two officers already elected remain so, and ballot on the secretary and the board of directors and the following ticket was prepared.

#### SECRETARY-TREASURER.

W. H. Bechtell.  
E. S. Powers.  
W. B. Liverance.

(Erase two names.)

#### DIRECTORS.

Helmer Rabild. Henry Rozema.  
Leonard Freeman. R. F. Frary.  
W. F. Raven. Claude A. Grove.  
Ira O. Johnson. Charles R. Webb.

(Erase all but five.)

Chairman: We will now proceed with the regular program, the first being

### PASTEURIZING GATHERED CREAM FOR BUTTER MAKING.

E. S. POWERS, HART.

Ladies and Gentlemen: Fortunately (perhaps for you) my time and mind has been completely absorbed in market conditions for the past week, wondering, pondering and figuring what would be the profits on thirty-six cent butter fat sold on a thirty cent margin; consequently, I have prepared no long drawn out theories on pasteurization of gathered cream for butter making.

Some two years ago, after some deliberation and investigation, in regard to the benefits derived from pasteurizing, I pin my faith to pasteurization, the use of the liberal amount of starter, and immediate churnings. This was an evolution from our former methods used. The word "evolution" has been defined by some wag, to be a clever trick performed by one Darwin, who made a monkey of Adam, so I am not yet real certain that the evolution that has taken place in the art of butter making in the past five years, is not making a monkey of many of us butter makers.

Before we changed pasteurization, the cream was gathered four times a week in summer and twice in the winter, using about twenty per cent or more of starter, and ripening over night. Upon this method we obtained good results, and was seldom cut on price of extras for our butter. But each year competition becomes stronger, which forced us to adopt some system whereby a saving could be made in making up the product. Two years of pasteurization has not weakened our faith in the proposition, but has in this time forcibly impressed upon our minds, as well as pocketbook, the uncertainty of practical and beneficial results from pasteurization, which may occur through lack of system in handling

and carrying from day to day without a skip, a good starter. Which is all important in making butter from pasteurized cream. I want to emphasize this important point in pasteurizing successfully is not to occasionally have a good starter, but at all times, which calls for very careful and systematic work in handling it. I dare say there is not half the creameries in this state today that pretend to use a starter at all, can be caught with the goods; at least that was my experience when visiting creameries in 1908. The present methods we are following, and hope to hear it discussed from a point of view of every butter maker interested on the subject. As I stated before, our creameries receive twice a week pasteurized at an average temperature of one hundred and sixty degrees, it passes directly from the cooler to the churn. The starter is added, then held in the churn after a thorough mixing for one to two hours, and then churned. We claim by this method this: A more even quality of butter from day to day, and better keeping qualities.

#### DISCUSSION.

The Chairman: The paper is now before you and Mr. John Batten is scheduled to open the discussion. We will hear from him.

Mr. Chairman, Ladies and Gentlemen, I do not see how I can add much to what friend Powers has said on pasteurization. When I first started out in the creamery business I got a position in a whole milk creamery. Our milk came in so sweet that it was almost impossible to get the cream to sour. When I did get the cream to sour, it took me five weeks to get in shape to make satisfactory butter.

It is just the reverse with pasteurization. Pasteurization has come in as an expensive cure for the farmers poor product. There is a lot of things that we would like to have in this world, but cannot get them and I think perhaps this is one of them. I took the position I have two years ago. When we started we received cream from the farmers and I think I have done as much good by going out among the farmers and getting them to appreciate what a good product of milk is as by the pasteurizing. I talk to my patrons to bring in better raw milk. In the first place we have a continuous pasteurizer and I had good success with the pasteurization until the cream got to coming in very sour in the summer time. With the pasteurizer I did not get any results whatever. I had to quit using it. The cream would curdle so bad and be so ropy that I could not use the pasteurizer. I want to add a word in harmony with Mr. Powers. We must have a good starter. Pasteurizing without a good starter will accomplish very little. The butter will be flat.

The buttermaker to tackle pasteurization without much assistance, as I did, will have more or less trouble. When your cream comes in sour, you may have trouble with its being ropy. I avoid it with the machine I have by having a high temperature.

We also have difficulties in making our starter. It is hard work for me to get the skim milk to make starter of in the winter time. If I can get hold of enough skim milk to make from five to eight gallons of "mother" starter, it would be a help, but it is hard work to get the milk. All our farmers want to feed their skim milk to their calves and pigs

in the winter. In the summer time, however, there is no trouble on this score.

One thing I have never experienced on and that is churning right away. I do not see how some of us can do that. Cream comes in from four o'clock in the morning to nine or ten o'clock at night. And if we would accept it the farmers would bring it right along as late as midnight.

Mr. Powers did not tell us how cool the cream should be. It must be cooled to get the proper condition, for ripening.

Mr. Powers: As the cream comes from the pasteurizer it is cooled down to the point we want it.

Question: Do you use a brine?

Mr. Powers: Yes, but at this time of year we do not have to use a brine. In the summer time we cool to 50 degrees: In the winter time to 53 degrees.

Mr. Batten: That explains it: and that is another thing that we have in our factory. We have so little water that we cannot use all that we would like. Our well is 140 feet deep, and it does not afford as much water as we want to use in the creamery. We have to put up large amounts of ice.

A member: I would like to ask a little about temperature. I would like to know what is meant by thorough pasteurization as regards temperature.

Mr. Batten: I do not believe we get a thorough pasteurization. We try to maintain a temperature from 160 to 180 degrees owing to the sourness of the cream. I think it kills the majority of the bacteria, but with the action of a quicker starter we get ahead of any that might crop up.

Question: When the cream is cooled to 50 degrees what value do you get from the starter? Do we understand that it ripens at the temperature of 50 degrees?

A member: That is a question I too would like to ask Mr. Powers, What result does he get, for as I understand it, he ripens this cream in the churn at 50 degrees, to which he cools it and what good does he get from the starter at that temperature.

Mr. Powers: That cream does not ripen in the churn, but ripens in the tub: that is it would improve in flavor after it was made a week.

A member: What per cent of starter do you figure to save on your butter after the buttermilk is drawn off?

Mr. Powers: I could not figure that. I do not think it would be thoroughly inoculated. You do not run the risk in quick churning as you do setting the cream over night, because it is just as liable as not to be off in the morning, so the quicker you churn up the better.

Mr. Phillips: I would like to ask Mr. Powers if he ever churns any of the cream after pasteurization without the starter.

Mr. Powers: Occasionally, but I do not approve of it. I advocate the more starter the better. And two hours standing in the churn would be better still.

Question: Do you think you get an exhaustive churning with mixture of sweet and sour cream?

Mr. Powers: We find it so.

Mr. Batten: In this connection I may say when we first used the pasteurizer we lost as high as two per cent of butterfat, and we tried everything to save it but could not. We came to the conclusion that washing out the curd washed the butterfat out.

Mr. Chevie: I will try to explain how we run a pasteurizer with regard to loss of fat. It all depends on how the pasteurizer is run. There are many that are put in and thrown out, and considered no good, when the trouble was not with the machine, but rather with the man who handled it.

In pasteurizing cream in summer time you must not pasteurize to a too high temperature. If you run your pasteurizer at 140 degrees you butter will not keep good. If you take it out, strip and cover, after three or four days you will find a rancid flavor from old cream pasteurized at 140 degrees. Complaint will be made about your butter—on top a tub it will be counted as fine goods, but as they get further down into the center of the tub this poor flavor will develop. Now if you will pasteurize your cream at about 155 degrees, you will find that the butter has a fair keeping quality. When you run at 160 degrees you have a pasteurized flavor. If you will churn that cream you will get better results than to hold it over night. The off-flavor that may be in some cans of cream—these germs ripen and spread through the cream so the quicker the cream is churned the better it is. In the winter time the trouble is with curd. The cream comes in some days high in acid, comes in at 52 degrees and under, and it is all put in the vat. There should be a rebuilder at the upper and lower end in order to get good results. You take about 25 to 30 pounds of salt and put in a ten gallon can of water and warm it up to 90 degrees and put this in your cream that is curdled and sour it and then you will have no curd. The ripest cream with a little salt brine in it will be cured. If you will try it you will find that it will do the work.

The Chairman: The curdy trouble never appeared in my cream except with the sour milk; in the fall and winter I have no trouble.

Mr. Chevie: If you have any patrons that are bringing in cream from the separator—pure grade of cream—if such ones are instructed to put in a pinch of salt, when they cream, it will prevent this.

Mr. Frary: My experience has been the opposite with regard to curdling cream of milk—just opposite from brother Batten—the trouble has been with ripe cream that the cream had acidity. When we had the sourest cream we had the least trouble. Everybody I think has a different experience. I shall try some of the various suggestions of my brother. We have had trouble with cream in pasteurizers. The other we had a batch of cream that was almost sweet and yet had acidity in it, and we were obliged to shut down the pasteurizer—just why the cream acted in this way I do not know—it seemed to be just the condition the cream happened to be in. We tried all kinds of temperatures on that, but it did not make any difference.

Mr. Phillips: I have had some experience in pasteurizing. In some creameries we used to think we had to run it at 150. We used to pasteurize at 140. When we went on the centralizing plan, we tried pasteurizing at 190, and by using a fair amount of starter we got good results.



Mr. Stafford: Are you pasteurizing at present?

Mr. Phillips: No sir, I do not think that pasteurizing in a small creamery is necessary. It is an unnecessary expense. In the first place you can not get the milk to make culture that is fit for the purpose, and you can not afford to hire an extra man to look after the pasteurizer, especially if you were in a community where there are three creameries in close proximity to each other, and where we have to pat the farmer in the back for twenty minutes.

A member: While it may be practical to run a churn and put the starter in the churn, would you do it if you had three big churnings in one day?

Mr. Powers: I could not tell until I knew more of the situation—a receiving vat might be necessary to put it in.

A member: To work it right you have to pasteurize. Let it set a couple of hours. I do not think it would be a bad idea to pasteurize that cream right in the ripener, and let it set three or four hours—I don't think it makes much difference whether it sets for a while or is churned right away.

Mr. Powers: I haven't got the real satisfaction out of this question. I should like to hear short testimonials on this one question—what do you think of this idea of quick churning?

Mr. Martin: I do not know whether the fault was mine or that of the pasteurizer, but as a consequence I have been obliged to spend a good deal more time than usual among patrons talking to them about taking care of their cream. I do not use it now, and I have better butter than when pasteurizing. I tried to cover up so much sin and wickedness. There are a good many points to this question of pasteurizing. If a person had lots of cream and lots of help, it might be successful and an improvement. But when both kinds were shipped to a commission house in New York, and they were unable to see any difference between that which was pasteurized and that which was not, I made up my mind that the pasteurizer would set there until after I was more convinced of its value. If we had spent \$3,000 educating these people in the way of producing better and cleaner cream, and delivering it oftener, I would have been more ahead today and so would they. (Applause).

The Chairman: In other words, if you had spent the time out among your patrons that it costs you to pasteurize your cream, the results would have been more satisfactory?

Answer: That is the idea.

Mr. Powers: I do not question but what equally as good butter can be made without pasteurizing, provided the cream is delivered at the creamery in good condition. The fact of the matter is many creameries are situated the same as we are, i. e., the patrons do not like to deliver their own cream. In such cases teams must be sent out to gather it in. By pasteurizing we have been able to keep up the quality of our butter with two deliveries a week which has proven with us to be a better proposition than not to pasteurize, and be obliged to send our teams to patrons' doors three times a week.

Mr. Best: In answer to this question of pasteurization, I would say that it is only in its infancy. Buttermakers throughout the state of Michigan, two-thirds of them, do not understand the handling of the

cream, getting it ready for pasteurization. I worked a while in a centralizing plant, and the Lord knows that if anybody ever got poor cream, we got it there. If you were to scour this country and go up and down in an effort to educate the farmer, he would spend all the money he made. Competition is so close, and it is getting closer all over the country, that every creamery is trying everything possible to meet all of these points. They will send out their solicitors throughout the country, telling the farmers, "We don't care what kind of cream you bring in—send us your cream anyway, no matter what its condition, we have a great machine that we run it through and we make good butter, and we pay you more than your local creamery." We had good success in our plant with the pasteurizer, but we were very careful about our starter. As regards ropy cream, we learned mighty quick that we had to have our cream just right in order to avoid coagulation and ropiness. I warmed the cream up in the vat, and then commenced pasteurizing. I found that in getting indifferent cream, it would coagulate on me even at 150 or 160. I then put it through at 180. My neighbor says he would not get good flavor. I beg to differ. I pasteurized my starter twice, and held my starter in good condition. I thought I saw more effects in the starter than in the other. But on the other hand, it is an expense to the creamery. It costs. It is lots of expense, and I don't know but it is better for the creamery man to go out and try to get the farmer to keep his cream in better condition. And when this is done, better butter will be the result, butter that the people like the flavor of better, and with less expense, than the other way. If you can get the people educated to keep the cream in a good sanitary condition, we won't have any trouble. The farmer himself is bringing the burden upon himself, and has got to pay for all this expense—why not take care of his cream? Somebody has got to pay for it, and he is the one.

A member: Don't you find it a lot of bother and rag-chewing on the part of the farmer to get the cream properly taken care of?

Mr. Best: It depends on how you get at them. I had one fellow that brought me cream that was in very bad condition, 136 hours old. I said to him, "I cannot take that cream. It is not fit to make butter of, but as you are a poor man, I will take it and sell it off at ten cents a can.

Then I told him how to care for his cream. I told him to aerate his cream as much as possible by stirring it occasionally. He took the suggestions kindly and the middle of last month he began bringing me as nice cream as anybody would want. He was somewhat of an exception—they do not all respond to our efforts in trying to help them.

The Chairman: We have not had a very thorough discussion of the last paper, but if there is no further word to be said, we will proceed to the next subject, as it will keep us going if we finish all of the topics that are scheduled for discussion this afternoon.

If there is nothing further to be said, we will next have an address by Dr. Chas. E. Marshall.

## THE KEEPING QUALITIES OF BUTTER.

DR. CHAS. E. MARSHALL.

Mr. Chairman, Ladies and Gentlemen: The subject which I am to discuss this afternoon is one that might appeal to you as being somewhat formidable and somewhat technical. I desire to assure you, however, on the start, that I shall avoid as far as possible, anything that will be misty.

The subject, "The Keeping Qualities of Butter," is an exceedingly difficult one. It is one that has not been mastered at the present time. The discussion which has just preceded this, is one that really merges into "The Keeping Qualities of Butter." You can see, from the various opinions expressed, that there is evidently no unison of thought in these matters. It will be some time before definite conclusions will be reached. All the details must necessarily be worked out to the satisfaction of every man interested in butter manufacture and butter sales, before a uniform practice can be established. It may be well, in discussing the matter of "The Keeping Qualities of Butter" to bring to mind some very common and pertinent illustrations, in order that you may the better understand what milk is, and what constitutes butter.

Milk is an exceedingly complex body; butter is, likewise, a very complex body. Accordingly, when the subject of "Keeping Qualities" is discussed, many difficulties arise from this very intricate nature of the products with which we deal. To solve them in a simple way is impossible, because they reach out in so many directions. When conclusions are reached regarding some particular phase, and we try to adapt these conclusions to the practical problems in hand, we find that the conclusions must be modified, because of their association with the other factors involved in the study of butter.

It is true that every attempt is made to reduce the subject to as simple a form as possible. Even in this simplest form, it is not feasible to use single factors, single conditions, because of the union of all of the factors in making up the subject of "Keeping Qualities" as a whole. Without going farther into this general discussion, let us immediately enter upon a simple analysis of the problem.

You are all more or less familiar with lard. You know that when you get a good quality of lard, in other words, a pure lard, there is not any question about its keeping. Warm water does not affect it, and all ordinary conditions seem to have no influence upon it. Shoulders and hams when sliced are sometimes placed in lard, but before this is done, the sliced shoulders and hams are cooked thoroughly, and the hot lard poured upon them; in other words, the shoulder and ham have been sterilized. The lard keeps out organisms; consequently, shoulder and ham do not undergo decomposition or change. Should you, however, attempt to put shoulder or ham down without cooking, you would doubtless have decomposition or change, and this would be more or less obnoxious. It is possible that a hot lard, if it were hot enough,

might partially sterilize the shoulder or ham, but in all probability this would not be the case.

There are times when lard becomes rancid, in other words, changes. However, if you study this lard, it will be found that the lard is impure and contains more or less nitrogenous material. The nitrogenous material undergoes decomposition, giving rise to bad odors, and bad flavors. It follows, therefore, that pure fat does not readily undergo decomposition, but when mixed with nitrogenous material, it is quite likely to be decomposed. It is my intention to make use of this in the study of the nitrogenous content of butter, as well as the decomposition of the fat of butter.

To impress upon you a little more forcibly the decomposition that nitrogenous material undergoes, let us consider for a minute, the change wrought in a piece of lean meat.

As we follow it up, it begins to putrefy, smells badly, and tastes badly. It becomes softer, and eventually breaks down. Little by little, it disappears, and if we should study the products, with the disappearance, we shall find that much gas is given off, and practically only mineral salts are left, after the decomposition has been completed. This is the ordinary putrefaction, which takes place in nitrogenous material, and illustrates to some extent the decomposition of casein or albumen as it appears in milk or butter.

One step farther: You take apples to the cider mill to express the juice. You put that cider away, and the first thing to be noticed will be the frothing at the surface, due to the rising of the gas. In other words, fermentation has set in, gas is being eliminated, and alcohol is forming in the body of the juice. The yeast plants, which are found on the fruit, and elsewhere, have grown in the juice just as they grow in bread, when you add the yeast cake. While growing, they decompose the sugar of the juice, and change it into gas and alcohol. Alcohol is, therefore, present in apple juice, after it has undergone fermentation, and there are traces of it, also, in bread. In the case of the apple juice, after the alcohol has formed, there usually sets in another change, giving the rise to acid, known as "acetic" acid. With the production of this acid, so-called "vinegar" results. In other words, other organisms, and bacteria act upon the alcohol of the hard cider, and change this alcohol into an acid. It is possible that still other organisms might enter and destroy this acid. Doubtless, some who have had years of experience, have noted this fact. I desire to use this decomposition of sugar into alcohol, and then into acid as representative of some of the changes which take place in the sugar of milk.

We have, therefore, studied the action of the micro-organisms upon fat, upon protein, and upon carbohydrates. In milk, there is the fat in the form of butter fat, protein in the form of casein, and albumen and carbohydrates in the form of sugar. You will, therefore, see that it is possible to have combined in milk various fermentations. By the decomposition of fat, it is possible to get an acid reaction, perhaps rancidity and off-flavors. With the decomposition of casein or albumen, it is probable that foul odors and bad flavors will result. In the decomposition of milk—sugar acidity usually results,—sometimes, as you know

it in pure lactic starters, but sometimes, in off-flavors and undersirable odors.

Let me say, right at this junction, that it is extremely fortunate that the lactic acid bacteria, acting upon the sugar of milk, are able to control many of the other fermentations, by means of the acidity produced. It is for this reason that starters are employed, and it is for this reason that much of the decomposition which would otherwise occur in milk and butter does not take place.

Some other factors enter into the decomposition which may arise in butter. One of these, which has received considerable attention, is the salt content. Somebody has said, just preceding me, that a pinch of salt is sufficient to stop decomposition. I think this individual will see, from what I have to offer, that this statement is erroneous. I have before me some charts, which will illustrate decomposition, as it takes place in salted fish. The per cents of salt employed are 5, 8, 10, 12, 15, 18, 20, and 23. The organisms developing in these brine solutions may be classed as rod-shaped bacteria, ball-shaped bacteria, and the yeasts. You will notice that the rod-shaped bacteria develop in these different percentages of brine more rapidly at the lower percentages than the higher. They may develop even in as high as 20% brine. So, too, we practically have the same conditions existing with the ball-shaped bacteria, but in the case of yeast, we find that the cells do not develop until a certain percentage of brine has been reached, and that they develop quite rapidly in strong brine solutions.

Salted fish have been known to undergo decomposition in these brine solutions, giving rise to putrid odors and flavors. These odors and flavors vary, of course, with the organisms growing and producing decomposition.

Butter contains, according to the analyses of Storch, 83.75% of butter fat; 13.03% of water; 64% of proteids; .35% milk sugar; .14% ash; 2.09% salt. It will be seen from this analysis, that there is present for decomposition, butter fat, protein, and milk sugar. All of these are subject to change. Fat undergoes decomposition very slowly, and if free from protein, so slowly that it may be neglected, except in very rare cases. We know that protein decomposes, and yields bad aromas and bad flavors. The decomposition of milk sugar may be undesirable, and at the same time, it may not, depending upon the organisms present.

I desire, now, to present three samples of butter, known as A, B, and C. B is supposed to be the best of the three. These samples represent the averages of several tubs taken from each of three creameries. A is the next best sample, and C is the poorest. These tubs of butter were placed at  $+6^{\circ}\text{C}$ ., and  $-6^{\circ}\text{C}$ .. It is noted that the unsalted butter produces a higher acidity than the salted butter; in fact, the unsalted butter at  $+6^{\circ}\text{C}$ . produces so much more acidity that it is not comparable with the other samples, but the most important feature of these three lots of butters, A, B, and C, is the fact that the acidity rose less in lot B than in lots A and C. In other words, the better the butter, the less acidity. Still further, salted butter apparently keeps better than unsalted butter. It is also noted that butter at  $-6^{\circ}\text{C}$ ., both unsalted and salted, keeps better than butter at  $+6^{\circ}\text{C}$ .

We may conclude, from this work, that factory conditions, salting,

and temperature have considerable influence upon the keeping qualities of butter.

Again, I wish to present the effect of the nitrogenous content of butter, through the chart, which I now offer. From this chart, you will gather that unsalted butter kept at  $+6^{\circ}\text{C}$ . was subject to considerable nitrogenous decomposition; that salted butter, at  $+6^{\circ}\text{C}$ . decomposed, but not so much as the unsalted, but the butter held at  $-6^{\circ}\text{C}$ ., both salted and unsalted, did not undergo so much nitrogenous decomposition. Both unsalted butters, one at  $+6^{\circ}\text{C}$ ., and one at  $-6^{\circ}\text{C}$ ., respectively, did not keep as well as the salted butters, so far as nitrogenous decomposition is concerned. Again, we have an important factor in the keeping qualities of butter, in nitrogenous decomposition, and it is quite probable that this nitrogenous decomposition gives rise largely to the undesirable aromas and flavors of the butter. However, this question of salting and not salting butter is not a settled matter, for there are those who still believe that unsalted butter keeps better than salted.

If we go back to our study of brined fish, and observe the possible decompositions that may occur, we are naturally led to the belief that while in some cases, salted butter may keep better than unsalted, it does not necessarily follow that there is sufficient salt present in butter to hold decomposition in complete check. I am disposed to believe that while salt has considerable influence in controlling fermentation, that it is possible for putrefactive changes to take place in either the presence of salt, or in its absence, and that it is largely a matter of nitrogenous decomposition. We should naturally expect that there would be less change at lower temperatures than at higher, and as indicated,  $-6^{\circ}\text{C}$ . is much better for the preservation of butter than  $+6^{\circ}\text{C}$ .

There is still another matter that I should like to refer to in this connection, because I feel that it should be understood in order to properly interpret the quality of butter. When the words, "fishy," "rancidity," "greasy," "oily," et cetera, are employed by scorers, that the same interpretation is not given to these words by every individual scorer. What may be "fishy" to one, is not necessarily "fishy" to another; what may be "rancid" to one, may not necessarily be "rancid" to another. It is unfortunate that this condition of affairs exists. There is no more definite way of getting at this matter at the present time; consequently, we shall be dependent upon scorers for determining the palatability of butter, and we shall be obliged to accept their verdicts. We owe them a great deal for their acuteness of tastes, and their honesty of purpose, but no one should forget himself so far as to believe that when a scorer makes a mark that that mark is absolute. The mark stands simply as an individual taste—a taste, perhaps, which has been highly developed, but is subject to various influences. To illustrate the possibility of influences upon tastes, let me say that if a scorer is running through a series of tubs,—some good, some bad—the tub preceding the one that is undergoing scoring necessarily influences the one that is being scored. Tastes and impressions are carried from one to the other. Again, scorers have different ideals, and in this way they may go astray. Some scorers attempt to classify according to their individual ideals; others classify according to market ideals. In our studies of decomposition, we are necessarily forced to take into consideration

the results which scorers may give. Since the marks of scorers are so open to influences of various kinds, it necessarily follows that the work on decomposition has this variable element entering into it.

In closing, I desire to leave an impression that may be stated in some such manner as this: The conditions existing on the farm, where the milk is produced, and the conditions which exist in the creamery, the manipulative processes of the creamery, in a large part determine the keeping quality of butter. There is, however, a chance for the butter-maker to contribute something towards this keeping quality. If pure fat is not likely to undergo change, it follows that the purer the butter, the better will be its keeping quality. The nitrogenous constituents of milk should not be incorporated in butter; in fact, butter should be reduced to as pure a form as it is possible,—in other words, reduced to as pure fat as it is possible, and yet retain the characteristics which are essential to the character of the product we call “butter”; that is, to put into butter only what is essential to make it different from pure butter fat. To do this, it means that the burden of attention all along the line must be directed towards quality and purity. To accomplish this purpose it is necessary to have character and quality in the buttermaker, as well as in the various other features of the process. Quality, purity, therefore, should be the key note towards securing those ideals which every dairymen, every creamery man, and every commission man should have.

#### DISCUSSION.

Chairman: Mr. Hillman, will open the discussion of this question.

Mr. Hillman: I don't see how I can say anything more. About everything has been said in regard to the keeping quality of butter. The keeping quality of butter is simply the goods that we get. If we get a good, pure cream we can make a good quality of butter all right. We must go after the farmers and see that they clean their separators—there is where the first start-off is. If we can train our farmers to clean their separators every time they skim, we can get a better product.

Besides that, we must have a good starter. There is the same difficulty in this, especially where we gather our cream for miles around the country.

In regard to pasteurization I have had but little experience to speak of. I have never been a high scorer, but always had a good quality of butter, that would bring about highest market price.

Mr. Stafford: I would like to ask Mr. Hillman a question. I used to think I could make butter before I went into the gathered cream proposition. But I found out that I did not know very much about it. I would like to ask if he has had very much trouble in having his patrons wash the separator twice a day or every time it was used? Is not that a little hard to make them understand why they should do it?

Mr. Hillman: You don't have to go very far to find that. Many of them think it is too much work. After I took the gathered cream plant at Homer we put in a pasteurizer to try it. I didn't know anything about pasteurizing and I don't know a whole lot about it now. Understand me, I am not against pasteurizing for I believe in certain localities, you will have to pasteurize the cream. I do claim this, however,

that if you can get your cream sweet or if there a very little acid there, and get it delivered to the factory often enough, I am of the opinion that it is not necessary to pasteurize.

The Chairman: If there is no further discussion on this subject, we will take up the next one on the program which is,

### "STARTERS IN RIPENING CREAM."

MR. SIMON HAGEDORN, FENTON.

Mr. Chairman, Ladies and Gentlemen, Members of this Association: I see that I am on this program to discuss the subject of starters, and cream ripening. I don't think that there is very much for me to say about it. My brother butter makers have discussed that topic quite fully and there is not much for me to say only one thing, and that is, amen, and sit down.

I believe that when we discuss these questions, all of which are very important, it would be well if we would confine ourselves strictly to the topics in hand, and not wander around over so much ground as we are inclined to. So I shall try and confine myself to the question of starters and cream ripening.

Now as to starters, we here all believe that we must have a good starter and, if we get a good starter, then we can make good butter. This starter question is one that is being talked all over this country and it is an old one.

We must have a starter and a good one: "Oh yes, I use a starter—I could not get along without a starter"—that is what they say, but we never find out just what the starter is.

We think that the starter is nothing more or less than sour milk, milk that is thickened up and poured in through a strainer in order to get it in the cream. Sometimes we have to chop it up in order to get it through this strainer. That is not a starter, just because it is thick and sour, not by any means.

We have two kinds of starters, two classes, the natural starter and the commercial starter. The natural starter we know is nothing more or less than milk that has been selected and set aside at a certain temperature to sour. When lobbered we use it. We do not know what we have to deal with right there. It may be good and it may be poor. So I will not take any time to discuss the natural starter because I do not believe that we can afford to handle it, although we might be successful in using it.

But we cannot depend upon it, therefore it is better for us to use the commercial starters. The commercial starter we all know is brought about in this way, buy the pure culture which we get from men in the Laboratory to select lactic acid germs. We see on this little bottle, "Lactic Acid Ferment." We take it for granted that everything that is called lactic acid, is what we want. That is not absolutely so. There



are lactic acid germs which produce different flavors, and therefore we have got to be a little careful in saying, that, as long as we have lactic acid germs we surely ought to have a good starter.

We often hear a buttermaker say, "My starter is good; it should be good—I just got a new culture last week—why should it not be all right? Well, it is not necessarily good simply because you have bought a new bottle of culture and tried to make a starter. That is no sign that you have a good starter. You must have good lactic acid germs, germs that will produce the right flavor. We have germs that will work on casein, and those germs will produce an off flavor.

That is not what we want. We also have germs that will produce nothing but acid, and no flavor; that is not what we want. We want to select the germs that will produce nothing but a good acid and a good flavor. That is the germ we want to try to get, as I understand it.

Can we tell whether we have that or not? We cannot tell absolutely, and even the men who work in the laboratory cannot tell by looking at these germs whether they are the right germs or not.

We can only tell the germ by cultivating it. We can only tell by our daily work whether we have that good germ we are after or not. That is done by selecting the very purest milk we can find that contains not over two-tenths of one per cent acid. Milk that contains over this is not fit for starter. So you will see we might take it for granted that we have a pure culture or pure lactic acid germ in that little bottle but we must look out and see whether we have a pure milk for that germ to develop in, therefore it is absolutely necessary for us to have good milk.

No milk should be selected without being tested to see how much acidity it contains. If it contains more than 2-10 of one per cent I would not advise any one to use it, for you cannot develop the proper germs unless the milk is right as regards acidity. More than that, we must try to develop an acid, and we must be very careful as to how much acid we develop in that starter, for we all know, that when milk lobbbers it contains about 6-10 of one per cent or 65 of acid. At that time the milk will curdle or lobber, and the germs are very active.

That is the time we must look out for the starter. We can not at that time tell whether we have the right flavor or not. The germs have not developed enough acid so that we can really tell whether we are on the right track or not. We must be careful at that time and watch very closely, and by all means must be very careful when we transplant these little germs into the milk that not only the milk is pure but that the bottles and other vessels are sterilized.

We must be careful to know that our milk that is used is sterilized. What is sterilized milk? I sometimes find that we get into a mix-up and trouble when we ask this question. Some say, "I sterilize my milk. I heat it up to 160 degrees." Now if you want to have sterilized milk, if you want to get good germs, you should heat that milk up to 210 and keep it there 35 or 40 minutes. This will kill the germs that are active, but that does not indicate that all the danger is past for there may be spores left and these will not be killed. So this milk should be cooled and the next day heated up again to this same temperature and allowed to remain at this temperature about the same length of time that you did

the other, and this will kill the germs that have developed during the night.

Then again we are not sure that we are using absolutely pure milk, so we continue one more day, then if there are any spores left they will probably not do any great harm. We have now a clear field to work in and that is one evidence that we are on the right track to make good starter. If the milk is right the culture can usually be depended upon as being pure. Of course the bottles, the thermometers and all vessels and utensils used should be sterilized. And we want to make thorough work of this sterilizing if we expect to have the right quality of a starter.

Have a sterilizer—it does not cost much—and have everything sterilized. Do not sterilize it and then leave it out but keep the utensils in the sterilizer, being careful to see to it that there is cleanliness and care in every little detail, for in this way will you be able to make a satisfactory starter. I have found that we are not careful enough as a rule in this regard. We want to do things too quickly, and we do not want to take time enough to do the work right. We want to get through with our work, regardless of what may come in our starter. If it did not come out right, we think it must have been poor milk; but the milk may have been all right, and the trouble come from our carelessness.

We also find that a great many do not realize when the starter is fit to use. Have you not noticed that about the time the conventions are to come off and tests of butter to be made, all are anxious to secure a good high score, and first thing that is done, often is to send to Detroit or somewhere else and get a new bottle of culture. We get it in a hurry and a new batch is made. This is transplanted into milk and we think it is all right, but I want to tell you that we can no develop a good starter so soon. We can not develop a good starter until the culture is from one to two weeks old and the older the better.

I know of a starter that was made the 16th of February a year ago and it is now much better than when first made. So it is not true, as many say, that a starter that is made has to be used right away in order to get good results. Carrying a starter along one week or two weeks is all right; in fact the longer you carry it the better it gets, providing you have been careful in every detail, have been clean and have had your conditions as they should be.

Temperature is very important, in order to be a successful starter maker. You must have control of it. You must have it so you can set your starter at any time of day, and take your starter next day and have it at the same temperature as it was the day before. Next to cleanliness, temperature is the most important. When your starter has developed to an acidity to about 7-10 of one per cent, I would think it would be a very good starter, providing it had this nice pleasant flavor. If you should not be ready to use the starter at that time, cool it down immediately and hold it down, and use it there.

Now in regard to ripening cream. Why do we do this? We have heard it discussed this afternoon—and a part of the topic has been taken away from me, but I want to say amen to what has been said. We have heard it said that it is not necessary to ripen cream. I want to ask this question later on, how is this, we claim at a temperature of 70 degrees we develop the very best flavor; that is at the time the germ

development will give us the very best flavor. Can anyone tell me what business these little germs have in being down in a climate around 48, nearly as cold as when Cook went to the north-pole. They cannot stand it there, nor will they work there.

They cannot grow at the temperature, consequently I take it for granted that they are not wanted, in other words, I take it for granted that it is necessary to ripen cream in order to produce a good quality and a good keeping quality of butter. This here dumping into the churn is not what it should be, I don't believe in it. I want that cream pasteurized, then cooled down to between 60 and 70 degrees, and with a good starter containing 7-10 of one per cent acid emptied in there and left there from one to three hours for the germs to develop the flavors I am looking for, I believe that it is absolutely of importance in the making of good butter.

I will not take anything back I have said until I am convinced, I have not seen it from my experience that I can do better by churning. I can get rid of the work and get out of the factory a little sooner, but I can not do so if I want to get body—I must cool down and reheat and leave it there to cool, then you get body along side of quality.

So to sum it all up, starters we all want; starters we all need in our business but apply these three things, pure material, cleanliness and a little brain work. I thank you.

#### DISCUSSION.

J. M. Rohrer: I have one or two questions to ask, perhaps not in relation to starters—every one knows that Mr. Hagedorn is authority when it come to the question of butter starters. I would like to ask this question in regard to ripening cream. In his experiences, has he ever found any advance or loss in the keeping qualities of butter by holding cream over night?

Mr. Hagedorn: Yes, I have, if I ripen the cream to too high acid. There is a point beyond which we must be very careful. If I have cream that is 40 per cent I try to ripen that to about 4-10 of one per cent acid. If I have a 30 per cent cream or nearly so I ripen it about 6-10 of one per cent. This may not be exactly right but it is a good thing to follow, nevertheless. If you follow that you will be pretty nearly right. Of course this is sometimes a hard thing to do in the summer time when you have sour cream. However we will have to overcome this and not try to have a sour cream or if we do have it, grade it.

If we would make a little acid—not pour the two creams together, the sour and the sweet, we could ripen this sweet cream and do better. It is a hard matter to ripen it and leave it over night. I believe a few hours is enough, although I have held cream over night. If I did I would set my cream to ripen along in the evening and of course churn very early in the morning. There is a case where it is not advisable to set over night but it can be done providing your cream is not too ripe.

Chairman: We will now pass to the next subject,

**"CHURNING, WORKING AND PACKING BUTTER."**

MR. FRANK SHAW, GOODRICH.

Mr. Chairman, Ladies and Gentlemen: In response to your program committee, asking me to prepare a paper on Churning, Working and Packing Butter; first let me say, this is the important part of creamery work, that the buttermaker has under his control. Here is when the poor body, streaked and mottled butter is made, this part of the work the buttermaker is wholly accountable for and the conditions in which it is finished. You will all agree with me that a well made pieces of butter makes up in a certain extent what it may lack in flavor.

Churning—We will assume the cream is ripened and cooled ready for churning. I would have the temperature at or near to 58° for raw cream at this time of the year. If I was churning pasteurized cream I would have the temperature some lower so to insure an exhaustive churning. I would also recommend having the cream test 30% if possible. Before putting cream into the churn, thoroughly mix it, also know how much butterfat is in the churning. As to color each churning should be the same shade, as a line of butter that runs evenly in color gives much better satisfaction than one that varies from time to time. See that the churn is in running order and oiled. Rinse churn first with hot water, then with cold. After the cream is in see that the doors are securely fastened before starting. See that the churn runs at proper speed, neither too fast or too slow, but to get the greatest concussion. After the glass clears which is generally in about 45 minutes, be careful not to over churn the butter. When the granules are the size of wheat kernels, stop churning and draw off butter milk.

Fill the churn about as full of water as it was of cream at about two to four degrees warmer than the buttermilk, and churn in this water for a few minutes. I use two wash waters at the same temperature, this washes out the buttermilk thoroughly and leaves a clear brine in the finished butter.

After the last wash water has drained off, add salt to suit your market. Sprinkle the salt evenly over the butter, then add about 10 pounds of water to 100 pounds of butter at the same temperature of the wash water if you are using dry salt; if not have your brine ready and then proceed to work. I could not give any fixed set of rules for working; different churns require more or less time to complete the operation. Each operator must determine how much time to use in working, but be sure to work until the salt is evenly distributed through the butter and is thoroughly dissolved. When the working is finished have the tubs washed clean and soaked, also the circles and lines. After cleaning the tubs fill by putting in 15 to 20 pounds at a time and pack down firmly and evenly. Be sure to pack well around the sides to fill solid and leave no holes. When the tub is full smooth the top and put on linen, dampen top and sprinkle some salt over top. Be sure to have lids fit the tubs and fasten on, using four tub fasteners.

## DISCUSSION.

A member: I do not understand why, or see the advantage of putting more water in the salt.

Mr. Shaw: I have had better success in dampening my salt before adding it, and find that it is better to dampen it in the churn than in the tub. The salt will dissolve better, and gets through the butter more evenly.

## RESURRECTION OF A RUNDOWN CREAMERY.

MR. L. C. WAITE, COLDWATER.

Mr. Chairman, Ladies and Gentlemen: I have been asked to give a dissertation on the resurrection—the resurrection of a run down creamery. Now, I want to tell you, gentlemen, that if there is any one thing in the creamery business harder than another, that is the thing, and no one knows that better than the fellow who has been through the mill. And after he has had the experience, he will realize that this resurrection business is pretty much like matrimony, because when he engages in it he takes a whole lot of chances. I have been a contractor on both jobs, so know what I am talking about.

There are, as you all know, disagreeable things in all branches of the creamery business, but the building up of a business that has run down is a hard one. What is necessary to build up a rundown creamery? I will briefly try to enumerate a few of the essentials.

You must take hold of the matter with a will; go after it as though you meant to make it succeed. You must get right down and work yourself. Be on the job the first one in the morning, and be the last one to leave.

Take a personal interest in your patrons. Gain their confidence. Show them that their interests as creamery patrons are identical with yours, and that the dairy interests if rightly followed and thoroughly understood means dollars to them as well as success to the creamery they patronize.

Keep yourself posted on every branch of the business and get your patrons interested in their work, set them thinking. Set them an example of order and cleanliness and industry at the factory. Do your work with a thoroughness that will convince your patrons that you practice at the factory what you preach to them.

Don't do things by halves. Anything worth doing at all is worth doing well. Don't start out to build up a rundown creamery without thinking it over, and getting an idea what there is ahead of you. Then when you commence the work do it in earnest with a determination to stay by the business until success crowns your efforts. Stay until you build the business up and make it a success, and prove to your patrons that you are interested in their success as producers as well as your own and that of the factory you operate and that when your competitors appointed your funeral "somebody lied."

Know yourself, know your patrons, know where you are at. Many

a business has gone to the wall because no one could tell where it was at until it got to the end of the rope and then they found out through the bank.

Keep sawing wood until you know your machinery from the drive belt to the blow off. Try to know the details of your work from the weigh can to the place where the finished product goes into the tub. Remember that it is perseverance that secures success, that there is no excellence without labor and no flowery pathway to prosperity and that only our honest and earnest efforts secures the results we are all working for. Work as hard for yourself as you would expect others to for you. Don't do things by halves.

#### THURSDAY P. M. SESSION. FEBRUARY 3, 1910.

There was no session of the Association on Thursday forenoon, that time being given to the exhibitors and to the election of the officers.

At the appointed time in the afternoon the meeting was called to order and the first thing on the program was the report of election of officers which was made by Mr. Haven. He announced that Mr. W. H. Bechtel of Caro received 68 votes and Mr. E. S. Powers of Hart, 74 votes for the office of secretary. Mr. Powers, therefore, was declared elected.

For directors the vote was:

Helmer Rabild, 81;	W. F. Raven, 136;
Henry Rozema, 94;	Claude A. Grove, 125;
Leonard Freeman, 100;	Ira O. Johnson, 91;
R. F. Frary, 106;	C. R. Webb, 116;

Messrs. Freeman, Frary, Raven, Grove and Webb having received the highest number of votes were declared elected.

A motion was then made by Mr. Haven to the effect that the buttermakers and cheesemakers each appoint a committee of three to meet with the board of directors at their annual meeting to assist in making out a program for the buttermakers and cheesemakers sessions, and that the railroad expenses and hotel fare for this committee be paid by the board of directors. This motion was seconded.

Then followed a motion of an amendment, that this committee include representatives from the city milkmen.

This amendment was later withdrawn and the original motion carried with the further suggestion that the president of the Association appoint that committee.

Mr. Charles R. Webb, Mr. John Batten and Mr. Bechtel were appointed to look after the matter.

Following the preliminary work of the Association the regular work of the session was taken up, Mr. Henry Rozema acting as chairman.

The session was devoted to the interest of the buttermakers and the first of the program was, "Creamery Butter Making as a Business" by Mr. George C. Yetter but he was not present.

Mr. Charles R. Webb was next called on to discuss, "Whole Milk Butter Making" but he did not respond, not being present and then the next topic was taken up.

**"SHOULD THE CREAM BE SAMPLED AND WEIGHED AT THE FARMERS DOOR BY THE DRIVER?"**

MR. W. H. BECHTEL, CARO.

Mr. Chairman, Ladies and Gentlemen: It is rather tough on me to be called out to discuss this subject, after going through what I have, and especially when I know that there are lot of the boys here just holding their breath, hoping to get a chance to discuss this topic.

As I said, I am somewhat wilted, and would answer this question by saying, "No." Why? For several reasons.

1. There are too many farmers wives, good looking wives, and if the test from the driver is not satisfactory, they always get what they want just the same.

The greatest benefit is quality. I believe I can get nearer to my patrons by getting them to send their cream in their individual cans. I cannot visit them personally, but I can see their cream, and see them when they bring it. Some say, "You see a sample" but that does not show like a whole can of cream. I had some experience when I took charge of the Cass City plant, using that method, weighing at the door from samples. Soon I had the biggest kick I ever had on my hands, on the question of tests. I have found it is almost impossible to get weights where we weigh at the door. It seems that for some reason you get their weights and if you are paying for the cream by the pound it generally means a loss.

Another thing it is a hard job to get your cream taken at the door that will show the same per cent of butterfat that your sample will of a whole bottle of cream, and you creamery men know that under the present system we cannot afford to give them anything. The price that we are all striving to pay, and the way we are fighting with one another for a little bit of cream, we cannot afford to give them anything. One time there would be a higher test, and the next time a low test. I saw this and so slipped over on that route and found out that when there was a low test it would be followed by a higher test the next time.

Where you hire an individual hauler for each individual route it is not practical, neither is it profitable.

I will not say anything more on this topic. I do not believe in a long paper, but just a few words, enough to open up the subject and then that the balance of the time be occupied in discussion.

DISCUSSION.

Mr. John McDonald not being present to open the discussion the chairman called upon volunteers.

A member: I would like to know what the difference is in meeting

the farmer's wife at her door or the farmer's wife coming in and meeting the creamery man at his door. There may be method in his madness, but I don't see where the difference comes in.

Answer. A member: "The trouble with me has been that I have never been able to get these good looking wives to come to see me."

Mr. West: I never feared meeting the farmers' wives as much as I did the bull-dogs, so I cut it out. I found that farmers would kick just the same if I test at the house as though I take it home and test it at the creamery.

They thought that testing with a lead pencil was just as correct as testing with a Babcock tester; they thought it did not make any difference—they knew as much about the one as the other tester. I know I tested the cream right but it did not prove to be a paying proposition, simply because of the limited number of cans you have on the wagon, you can not grade your cream as you should.

Some of this cream will be good, some fair and some bad. With me this method was a failure and I think it will prove to be bad for anybody that undertakes to do it.

Mr. Frary: As I understand the question it is. Is it policy to sample the cream at the door, not so much whether it pays or not. I think it all depends upon the local conditions, there are cases and places where there are small patrons, and perhaps if your driver has a long route and can get all the individual cans on his route—if you get the right kind of driver you can take a sample and weigh it and then check him up when he gets home, if you check him up each time at home and follow up with the plan he will not run behind very long if he wants to hold his job.

Mr. Best: I have tested both methods and found that the test taken at the door by the driver did not hold out; that the weights would not hold out; that he would not mix the cream as he should to sample, etc.

Mr. Phillips: How can you tell anything about the quality of cream after driving over the country for 45 or 50 miles?

Mr. Bechtel: I know that once in a while a can comes in not as it should be and we get after them gently, but I have learned this; that if the cream is in a good condition when it leaves the farm it is pretty good when it gets to the creamery. I have patrons whose cream I receive at eight o'clock in the afternoon. This is particularly the case with one man that I have in mind and yet his cream comes in excellent condition and is rarely ever sour. The fact is that if a farmer will take care of his cream it will not deteriorate very much, if any, by being hauled all over the country. We have his cream and it shows us its condition. I have had no more trouble in churning half a can of cream than the average can when filled because when filled you have to churn it a good deal.

Mr. Hagadorn: Our driver does weigh so that it will hold out.

Answer: It can not be done. There is a waste every time.

Question: What about the percentage of cream when taking a test; that is, as regards being light or heavy? What about its being a fair test?

Answer: I think that the average man taking a sample does not get it as thoroughly mixed, and especially if he sends the sampling dipper



down. If he does not send his sampling dipper down too far, the test would be all right. If it went down too far the farmer is cheated. A sample taken then would not be a fair sample, I should say. If you have a careless hauler, he is liable to get the bottles mixed, and then he does not know where he is at. I had a hauler come in with samples of cream of a certain man, and that particular man had not had a drop of cream on the wagon for two weeks.

Member: I just wish to say that the trouble in not having them mixed is in not having proper tools with which to mix it. He was talking about dippers. If you use a disk agitator you will have no trouble in mixing. They can take just as exact reading at the door of the farmer as can be done at the creamery.

And he spoke about having samples mixed. You can get these bottles that are numbered, with screw numbers, so will have no trouble. The driver has the man's number on the bottle, his sample of cream is put in there, and it will stay there and there is no possibility of making a mistake.

Answer: That is all well enough if you have a man that takes pains to mix it,—whether you have sampling dipper or disc—that is the question. I have fourteen haulers, and I will guarantee that out of the fourteen haulers, I have not over seven that will take correct samples. They are paid so much a trip, and the quicker they get home the quicker their job is done. They do not take the interest in the matter that they should.

Question: The gentleman says that he has seven that do not take a correct sample—will they not take it?

Answer: It is a question.

Mr. Worley: If you have a man that does not care about it, don't care anything about his job, of course he does not care anything about his samples, but if this thing is all right with the buttermaker and with the sampler, I cannot see why we cannot get a fair sample at the door.

Mr. Smith: I believe that if a hauler knows that he is going to be checked up correctly when he gets into the creamery, both as to weights and butterfat, there will be but little difficulty on the weights and test. Our method of doing this is this: we have the net weights; we have a 30 gallon jacket can, on which the net weight is marked. When the cans come in in order, track is kept of them, and the cream is weighed up. Then his book is taken to the adding machine, and his weights are added up, and it can then be seen how they compare with ours. We make one draft of each 30 gallon can. Perhaps he may have made 15 or 20 drafts for the same can. There will be a little variation in weights. Perhaps he will have a couple of pounds more cream than we; very seldom more than that. He takes individual samples, and we test it out daily. When this cream is weighed up, sometimes he has three 30 gallon cans of cream. We take a sample dipperful out of each one, and then compare with the individual test, and so we have very little trouble on variation in weights and test. If that driver knows that if he is ten pounds short or long, he must account for it, he will be careful in his work if he has any desire to keep his job. I presume there are conditions in which the individual can system is far the best, but under conditions where one is going out and getting drafts of cream from thirty to forty points, I

do not think this individual system is practicable. It does, however, give one an opportunity to know what line of cream is delivering.

The Chairman: The discussion seems to have come to an end on this topic, so we will proceed to the next one.

## THE GATHERED CREAM SYSTEM FOR BUTTER MAKING.

MR. R. F. FRARY, LAPEER.

Mr. Chairman, Ladies and Gentlemen: When your secretary asked me to take this subject, it was with some reluctance that I consented, not that the subject did not furnish ample thought for a live paper, but the fact of the matter is, the subject of gathered cream butter making is so broad, that for me at least, it is a hard matter to find a starting place, and I don't know but equally hard to find a stopping place.

The more I see and know of the gathered cream system for making butter the more I am persuaded that it is bound to become the universal system, and that the question with us as buttermakers and creamery men, should not be, how can we stop the progress of the hand separator, but rather, how can we best take the situation in hand and develop it in the right direction. One of the few things I have learned by experience, is that it is far easier to start a new cream patron out in the right direction, than it is to stop him and turn him about after he has been traveling for a while in the wrong direction. Hence my advice, would be, don't try to discourage him, but if he is separator inclined, tell him that it is all right, and then help him to make it all right by proper care of separator and cream, and by frequent delivery of his cream to the factory. When we succeed in accomplishing this, we will have succeeded in wiping out the distinction in the markets between whole milk and gathered cream butter.

One of the most vital points, and perhaps one that has caused more gray hairs in the heads of our buttermakers and managers than all their money, is that of getting this cream to the factory before it gets too old without the expense of gathering taking all and maybe a little more than the profit amounts to, and like as not, if, say one-half of the total cream that arrives at the plant is delivered by individual patrons, if the management is not mighty careful, the expense of maintaining these few routes, over the necessarily scattered territory, will absorb the profit on what is delivered free at the creamery. Of course if there is no cream, or very little delivered individually and the routes have a chance to handle it all, at a margin of one cent or two cents for hauling, this is a different proposition.

With the creameries that I have had anything to do with since the time of hand separators, it has not been my lot to be in a place where the cream was delivered to any great extent by the farmers, hence it meant gathering by route if we got it at all. There are however, some advantages to this, the two chief of which are, (1st) being able to pick up many small patrons which absolutely will not take time to deliver

their product, especially in the summer season, and (2nd) the routes may be run as often as is thought best. However, I am sorry to say, and say it to the shame of many of our "thumb" creameries, that a large part of the cream in that section as well as in other parts of the state, and especially where centralizer competition is known, is only gathered once a week this time of the year, and in many cases where farmers are left to deliver their own cream, it is liable to run even longer if the weather is bad or if the farmer happens to be busy.

These are likely the conditions the program committee had in mind when they asked me to talk on the subject of Gathered Cream System for Butter-making, for these are the conditions that confront the majority of makers in the gathered cream factories, not only of Michigan but of the other states as well. However, I believe, with all we can do toward educating the farmer in the proper care of cream and separators, with all the skill and science of the buttermaker, and with all the high priced and improved machinery that money will buy, that if we do not contrive some way in which to have this cream delivered to the factory oftener, and especially in the winter time, that not only Michigan will lose her good name for fine butter, but that the creameries, and perhaps most of all the dairymen themselves, will suffer a mighty blow to the industry.

Another point experience has taught me is, that if we are having trouble with our butter on the market, almost invariably it is in the winter months, and for me, the only way I have been able to successfully overcome this, has been to run my cream routes oftener. For the best results, I believe they should be run as often in winter as in summer, altho we are not carrying this idea out in practice.

Our system for gathering is to use the 20 gallon jacketed cans with floats, and in the summer, into each can about 15 pounds of ice is put, in the morning before the wagons leave the creamery, and all the small amounts of cream (below 7 or 8 gallons) are weighed and put into these cans. Where the patron has 10 gallons or nearly so, we exchange cans with him, and weigh and sample this at the creamery. Each wagon is provided with a heavy canvas cover. In summer it is a shelter from sun, dust and rain, and in winter, tends to prevent freezing of cream in transit, and jostling of cans over rough frozen roads.

When the haulers return at night, the cream they have weighed and sampled on the road is reweighed and tested. The haulers copy the names, weights and sample bottle numbers of those they have weighed in on the route, from their route book to our scale book each night, and when the testing is done, the butterfat is figured for the route, and compared with the result of our sample on his weighed in cream. By checking up in this way, the driver takes pride in coming out with the correct amount of butterfat, and as a result we seldom ever have trouble with shortage on the part of the driver. We also know with a certainty just how much butterfat we have in each churning and if there is any thing wrong we know about it at once.

Of course the matter of expense is practically all that stands in the way of gathering cream of milk anywhere, as often as it should be gathered, but with us we have reduced this expense quite materially by putting our own rigs out onto the road. This winter none of our

routes are going farther apart than three times in two weeks, or practically every five days, and the best routes we are running twice a week this winter. The ideal system of course would be every day in summer and every other day in winter, but if the average Michigan buttermaker can get his cream just one-half as often as this, and then use his best knowledge and best means at hand, Michigan gathered cream butter will, I believe, rank well with the whole milk plants. The fact of the matter is, from indications at least, we gathered cream plants as a class, not only owe to the farmer, the consumer and the merchant, a better grade of goods as a whole, but we sincerely owe it to ourselves in the way of our future destiny, for it seems it is bound to be the case, that time will put a wider range of price on our quality. The merchant is clammering for this, the consumer is unconsciously demanding it, and the man who is now producing the quality is asking for and getting it. Are we going to be among the quality fellows, or are we going to be content to settle back and down and be in a class by ourselves?

So much for that end of the business: And I want to confess that of late years I have been more familiar with that part than I have been with the mechanical or scientific part of butter making.

Naturally, about the first step in the process of manufacture is the matter of pasteurization. My stand a few years ago was that there was nothing in it, but when I left the bluegrass, whole milk creameries of Missouri, and cast my lot (which wasn't a whole lot either) into a Michigan hotbed of sour cream and competition, it did not take long for me to conclude that Helmer Rabild and Simon Hagedorn were my true friends, and also true friends to the Michigan dairy industry, when they said "you better put in a pasteurizer." We did put in a pasteurizer and we did see immediate results, and I do believe that where cream is bad, it can be helped by pasteurization, providing it is done right, and also providing you have a good heavy lactic starter.

However there are times and conditions, even with the gathered cream, when it is a question in my mind if it is policy to pasteurize. In fact a good part of the butter we made last summer was from raw cream. The raw cream was of good quality, and at the suggestion of the butter receiver we experimented last May, after cows were on full grass, on every other shipment for a while, with the result that we finally cut out the pasteurizer altogether. However we were forced to resume it when the cows went into winter quarters and dry feed in the fall.

One great advantage of not having to pasteurize in the summer is that we do not have to wait so long for the cream to cool or harden before we can get it into the churn, and during hot weather especially, I like to keep churned up as close as we possibly can. I know of creameries that make a practice of churning almost immediately after pasteurizing when they are crowded in the summer time, but I believe it is impossible to get a body that will stand up to the heat so well with this practice.

I do not think the average cream that arrives at the gathered cream plant needs much time to ripen in the summer at least, but this can be over done by getting the cream in the churn before the fat globules are thoroughly hardened.

I am a strong believer in the use of starter, and can not conceive of a

place or a condition in which a good heavy starter would not be of material help, without it be possibly in a case where the cream is too thin to permit of its use. If the cream is sweet enough so you can convert it all into a lactic ferment, so much the better. I believe in having the starter all ready and in the ripener, so that when the first cream is pumped into it, it can immediately get busy. We try to have, and usually do have all the starter the richness of our cream will allow. At this time of the year, altho we do not get a particle of whole milk, only for starter, most of our cream arrives sweet, so it is not churned till the next morning. Our method for churning, washing, salting, working and packing is likely about the same as the methods used in handling the whole milk butter.

Just one more word with regard to the cream. I believe the extreme cases of bad cream are not so serious a menace in butter making as the medium cases. The medium case is usually the patron that has a fairly good quantity and for the reason that his quality is not bad, it is often hard for him to understand that his quality is not first class, and too, with his quantity, he can be more independent, as other markets will cater to his trade.

This class also originally constitutes a much greater majority than the other class mentioned. However the cases are few that, with sweet oil and perseverance, can not be helped. When they are given up however, the place for them is in the class with the poorest instead of the best.

There are several ways of handling these 3rd graders, or extremes. If your talk is of no avail, they can be churned in a small churn, and their butter sold on the local market for what it will bring, turning the receipts over to the fellow that had the cream.

Another system that I have found to work out like a charm, and while it may be a little hard on the other fellow, yet at the same time apparently they appreciated the patronage. Within the last year there have been two different "mail order" concerns, come to our town and start up shop. These fellows, each in their turn, have had the advantage of all this "packing-stock" material as long as they saw fit to stay. When I could not prevail on the farmer to take it down town and sell it in his own name, I had a young fellow working for me that made a typical farmer's son when he got about four rolls in his overalls, some cow manure on his boots, and got on a checked mackinaw.

I think it hardly needless to say that these friends of mine in both cases have moved on to greener pastures.

#### DISCUSSION.

Walter Hall, Owosso: Mr. Chairman, Ladies and Gentlemen—After this subject has been so ably handled by Mr. Frary, it is of little use for me to try to add any new thoughts on the subject. However, as a party of a dozen or more looking at the moon at the same time may give it a size all the way from a straw stack to a silver dollar, there may be other views of these subjects than the ones we have just heard.

There is no question in my mind, where the quality of the product is the chief consideration, that the whole milk creamery has them all beat to a frazzle. There are other points to be considered from an economi-

cal standpoint, however, such as hauling the milk to the creamery returning the skim milk to the patron, loss of fat in skimming at the factory, consumption of fuel while separating is being done, extra cost of help, etc., any or all the above items and many more, are partially or wholly avoided in the gathered cream plant. The milk hauling proposition alone has been the death knell to many a small creamery, and is a constant source of annoyance to larger concerns, who can, however, withstand the periodical drains of the bonus system.

For example John Doe has a route which in the flush brings in about 2,000 pounds of milk daily, and for which he is paid \$2.00 per trip. This is all well and good as long as he brings in 2,000 pounds or better of milk, for this is met by charging patrons 10 cents per hundred, but in the spring and in the fall until the creamery begins running every other day, he averages we will say, 1,200 pounds per trip or at the rate of twenty-six trips per month. The creamery pays him a bonus of \$16.80. The greater the number of such routes a creamery is supporting the worse it is off.

In some cooperative creameries this is charged to running expense and if the total running expense is deducted from the gross receipts to get at the price paid for butterfat, then the man who delivers his own milk gets to help pay John Doe for bringing in a dummy route. This is one of the beauties of cooperation.

The loss of fat in separating is no small item in a large whole milk plant, as is also the extra coal used while the separating is being done, both of which is avoided in the gathered cream plant. Cost of equipment must also be considered, as a cream plant can be equipped for about one-third less than a milk plant, unless a pasteurizing outfit is included in the former.

Speaking of pasteurization—I remember some years ago of hearing Major Alvord say—he would as soon eat a live “bug” as a dead one. Now, I prefer the dead one and further prefer having it cooked. Pasteurization is the best known method of remodeling old and off-flavored cream when used in connection with a good starter. I realize that you cannot make a good egg out of a bad one, but when mixed with something else and put under a French name on the bill of fare you may be able to dispose of it.

Grading cream is a good plan where it is practicable but where competition is strong, which is getting to be pretty generally the case, the creamery owner wants to think twice, or at least, once and a half, before he adopts this plan. Most of them take it as it comes with a cultivated smile and if they have any suggestions to make, do it in an off-hand manner as though they had spoken in their sleep. Of course this isn't right, but the millennium is a good ways off and in the meantime there is coal to buy.

Summing up then I will say that I have personally seen many good points of advantage in both the whole milk and gathered cream methods. If a community is thickly settled and there is enough milk within a radius of four or five miles to support a creamery then the whole milk plant by all means, but when the patrons are scattered and the creamery must draw from a large section of country, then gathered cream plant is preferable.

From the buttermaker's standpoint a creamery owner and former employer of mine put it like this:

"Any man who understands his business can make good butter out of whole milk; but it takes an artist to make good butter out of good, bad and indifferent cream."

Question: What sampler do you use on the road?

Answer: About the same as those fellows over there (indicating the exhibitors) sell; made at hardware stores—a long shaped thing to reach down to the bottom of the can.

Question: How large a can do you have for weighing cream?

Answer: We use a four gallon shotgun can, about seven inches in diameter.

Question: How many weighings would you have to take? And what would be the result if you have a number of them?

Answer: If there is the number of weighings—if the farmer has more than this can full—that can holds about five gallons—if he has more than this can full, the driver takes the sample out of the farmers can by stirring it up, which is just as accurate as the other way.

Chairman: If there is no further discussion on this subject, we will now proceed to the next topic for consideration.

## SHALL MILK AND CREAM BE TESTED DAILY OR BY COMPOSITE SAMPLE.

MR. C. A. GROVE, LITCHFIELD.

Mr. Chairman, Ladies and Gentlemen: This is one of the very particular parts of creamery work, for it means the profit of the creamery, as well as the dairyman, and in making a test the same care should be used as the banker uses in his business, for it is nothing less than a money proposition to both.

In testing milk and cream, to be absolutely correct, I think it is necessary to sample and test each delivery separate, but the question arises, is it practical? Milk can be tested by composite sample very satisfactorily, and I think it more practical, as the per cent of fat or quantity of milk from a herd does not vary much from day to day. But in cream it is different. You do not often find cream delivered by a patron, where there is not a large variation in the per cent of fat, as well as in the amount of cream, and in case of a variation in amount of cream or per cent of fat the average of the tests would not be the average per cent of fat in the cream, unless you had taken a sample from each can to correspond exactly to the amount of cream.

There are cream and milk samplers on the market that, if given the proper care, would give a very fair sample of cream for a composite test.

The cream should be well stirred, and the sampler well rinsed, after each sampler taken, and care should be taken to not fill the sampler as full from a five gallon can as from a ten gallon can, should the patron change cans at times. Then the samples should be kept in clean, air

tight bottles, in a dark place, and should not be held more than one week. My opinion is, however, that the more satisfactory method is to sample and test cream from each delivery. Then you can know at the end of each day's work your actual overrun, which as you know is the difference between the butterfat you buy and the finished product you have to sell. I do not in any way blame the patron for insisting on getting a square deal, nor do I blame the creamery man for keeping what legally belongs to him, and think the only way to be fair to both is to test each delivery separately, and be able to pay for it accordingly.

## DISCUSSION.

Mr. Parrell not being present, the chairman said:

"I would like to know how many of the buttermakers here present take composite samples of cream? How many will stand for that kind of sampling?"

A member: There are some here but they do not hold up their hands.

Mr. Powers: In reference to this sampling of cream from composite samples, I would say, we test every sample that comes into our creamery. We sometimes get composite sample of two days cream, but I do not know as it is just as satisfactory as where we take the samples on one single can. Of course, if the cream is thoroughly stirred in before the samples are taken, and we warm the cream and milk thoroughly, before the samples are taken, I do not see in that, anything in the way of getting the fair and square test of the cream.

A member: I would like to ask Mr. Powers for my own information, if he ever noticed any difference in the per cent of over-run; that is taking the sample every day, trying out his over-run, and then making composite samples.

Answer: That would be hard; we might incorporate some more water in one case than in another. Taking a churning today, if the butter comes a little harder, and you don't get it in the same consistency, that is not being as soft one day as next, of course there would be a variation there, because a butter that is worked rather soft incorporates more water than butter that is hard. Therefore it is not possible to distinguish.

A member: I would like to ask Mr. Powers if there was not a chance to evaporate some of the moisture out of the cream when he has this composite sample?

Mr. Powers: There might be a trifle over if held any length of time, but we only hold ours three days, so there would not be much evaporation in a covered box. Our boxes are kept cold and covered until warmed for taking samples.

A Member: I have taken samples direct from the can for over a year, and I tell you my customers are better satisfied where the cream is set every time, than from composite samples. You can get more correct samples when tested at once. I use the stirrer the same as the gentleman behind me talks of. I have my little scales and take my samples direct from the can and put it on my scales. When I get my twelve bottles ready I set them off, and then fill twelve more. I do not have any sampling tools to wash, etc.



A member: I would like to ask Mr. Smith to indicate his experience with the two methods—he says they are using the other way now.

Mr. Smith: I will say that we only commenced the first of January to take by individual test. Previous to that we carried composite sample, so as yet, it is hard to say how it is going to work out, from the patrons' standpoint, compared with the former method. But from what we are able to know of it just now, it will be better. They will appreciate the new method, and I believe it will be better for each one of us. Every other day we have cream come into our station that is turned into the other cream, so we cannot deal with our over-run, that is, compare our over-run from individual samples with those secured by the other method. But we have found that we can get a little better over-run in our neighborhood, about three per cent, where the individual system is used than the other way. In one instance I knew of a farmer who asked the creamery man whether he was going to make a test from composite samples. When the creamery man told him he was, and the result set him to thinking, for when the cream came in the next day it was weighed and found that it was 20%. That would make eight pounds of butterfat. The next time it came in, the weight was observed and found that it was 20 pounds and tested 40%. Of course eight pounds of butterfat from the quantities should add 16 pounds of butterfat. Now 20 pounds and 40 pounds give 60 pounds of weight. Now multiply your 60 by 30% and it gives just 18 pounds of butterfat, whereas the creameryman actually got only 16 pounds, so that farmer intended to cheat the creamery man every second gathering, and he got caught at it.

So, gentlemen, if he mixes the composite sample and each quantity of cream that he receives tests the same, then the average will be the same unless some water evaporates from it, which will be very small, but if that cream should be of unequal thickness, then he is the loser every time, not the patron.

Mr. Batten: That incident shows that the farmer is not a chump.

Mr. Smith: I know he is generally considered to be "the honest farmer," and the soul of honor. I was for sixteen years a school teacher, and honesty and truthfulness were the virtues that we used to try to instill into the hearts and minds of the children, and I used to think that dishonest and truthful men were scarce among the farmers, but now that I have got out in the world and bumped up against it in a business way, I am forced to say that from my experience a strictly honest man is a rare fellow, and that the farmer is not expected. We find as many dishonest farmers as any other of the people on earth.

Mr. Powers: In answer to this man's question in reference to the 16 and 18 pounds of butterfat. This can be overcome in a certain way—I think we overcome it as a rule, taking a common 10 gallon can; we have sixteen pounds of cream and should test 40%; if we stir it thoroughly, put it in our sample bottle, next day that cream decreases so that it does not test but 20%. When we decrease the cream the quantity is increased, therefore increase the quantity. The cream is deeper in the can and we get more cream, and the difference is overcome. I had cream come in this winter that tested very high, as high as 54%—it was just as thick at the bottom as at the top, and the secret of it was that it had been stirred. Now I ask my patrons to do that thing—

every time they put cream in their can, stir it; put the cream in a separate dish when taken and cool thoroughly, then pour it into the can after it is cooled, and stir up thoroughly together. This will stop the growth of acidity, this putting of the set cream into the can, and so the cream is ever so much better. So that one point, stir the cream thoroughly when each batch of cream is put in. And another thing, if this is done, that is, the cream stirred, the man at the sample can will get a better sample.

Question: I would like to ask Mr. Powers whether he has ever tried the Case Sampler on low and high per cent cream.

Mr. Powers: I think they would have a tendency to overcome what this gentleman said a little bit ago about the difference of two pounds. The depth of cream would increase the sample the same as decreasing the sample in the heavy cream.

Question: Is it then really reliable?

Mr. Powers: No, even that is not really reliable, for the reason that when the farmer has a tendency to give you thick cream, then there will be a loss one way or the other.

Chairman: We will now proceed to the discussion of the next topic,

### "GRADING CREAM AT THE CREAMERY AND PAYING ACCORDING TO QUALITY."

MR. COLON C. LILLIE, COOPERSVILLE.

Members of the Association, Ladies and Gentlemen. I am glad to be here this afternoon to talk for a little while upon this important subject, for I believe this to be one of the most important of the many subjects before the creamerymen today,—this question of grading the cream and paying for it according to quality.

Just about five years ago our State Legislature passed the present Dairy Law, which broadened the scope of the Dairy and Food Department and gave us the inspection of creameries, cheese factories and dairy products. It is just about five years since we began the systematic inspection of creameries and cheese factories and farm dairies. Of course we have accomplished the most with creameries and cheese factories because we have given them the most attention. Every creameryman in this state will, I think, agree with me that inspection has been beneficial to the industry. We have accomplished much in that direction. We are putting on the market a more uniform product in both cheese and butter. And not only is it more uniform, but it is of better quality than it was five years ago. It is yet, however, far from what it should be and it is not what it would have been had we not changed largely from the whole milk to the gathered cream system. Five years ago we had many whole milk creameries; today we have very few of them. We have changed to the gathered cream system and now we have another problem to solve. As fast as we have improved in butter making, we have deteriorated in the raw material and therefore the average score is not so very much

better now than then. Nevertheless, the inspections have been of great benefit. However, it seems to me that from one standpoint this inspection has gone just as far as you can go with it, so far as bettering the product is concerned, unless you can induce the legislature to provide more inspectors. We have enough to look after the creameries and the cheese factories, but we haven't the force so that private dairymen can well be reached under this inspection.

I wish you could all have heard the representative of the Detroit Board of Health last evening tell what inspection had done to improve the milk supply of this city. With them this idea of inspection is everything, as it has accomplished wonders in giving the city of Detroit a better milk supply. The more thorough the inspection, the better will be the product. We need more inspectors, and if the matter is insisted upon, we can get them.

I believe that inspection has done all that it well could do for the creameries, but I do not believe that the creameries have done all they can do, or all they ought to do, to help improve the raw material, and it is here that this question of grading the cream comes in.

I tried to get an agreement among the larger creameries as to a basis of grading cream, and there was a willingness to do so and abide by the agreement, paying for the cream according to quality, but in the practical working out of the question the agreement amounted to nothing, because they were afraid they would lose a customer or two. Here is the real problem and it is a serious one in the way of accomplishing much of anything in this direction under the present circumstances.

In my experience and observation of this subject, sometimes I have been an optimist, but at other times I am inclined to be a pessimist. I am now what the modern fellows call a "Possomist" on the subject, and you can understand what I mean by a little story. Booker T. Washington once at a meeting of colored people called on different ones to get an expression of their opinion of the present condition and future prospects of the colored race. He called upon Mr. Jackson, a pretty good looking fellow, with a decent suit of clothes, and a satisfied look. Mr. Jackson said: "I believe that the present condition of the colored race is good; that they can make of themselves all that they want to; and that they have all the opportunities they could ask for, and a perfectly fair chance." Then he sat down. Mr. Washington allowed that he was an optimist and he was glad to hear such talk.

Then Mr. Jones was called upon: Jones had a rather contracted chest, and looked as though he didn't know what it was to have a good meal of vituals. He looked like a dyspeptic. He said, "I don't agree with Mr. Jackson. I don't believe the negro has a fair show, and never has had. Every man's hand is against him." Mr. Washington allowed he must be a pessimist. Then another man was called upon and replied. "Mr. Washington, I don't know as I know what you mean by these words, optimist and pessimist, not very clearly anyway, but this I do know. I knows what I sees, and I don't know always what I don't see. For instance, I goes out into the fields and see the persimmon trees with little persimmons on them. I know these little persimmons will grow into big ones. Then I sees the little possoms that come to eat these

persimmons, and they will one of these days grow into big possoms, and after a time I goes out with my dog and catches one of dem possoms and skin it and dress it, and Dinah she take it and cook it nice and done, and after it is cooked we eat it, and Mr. Washington, I'm a possomist.

So, friends, I am "possomist" on this subject of gathering cream. I know what I have seen, and I don't know for sure anything I have not seen. I have forgotten the theory. The great stumbling block in the way of grading cream is that we could not fix upon a standard that would be agreed to and lived up to—what was good cream and what was poor cream. When you say from your sense of smell or taste that this man's cream is bad and another man's cream is good,—when you say that this man's cream is just as good as that man's—then the man with the poor cream comes back at you and says, "My cream is just as good as that man's cream, and if you don't think so, I will take it to the other creamery,"—and you know what the result will be, especially if there is much competition.

In our creamery the necessity of grading the cream was admitted; but we hesitated for we were right under the eyes of the centralizers of Grand Rapids. We didn't want to lose our customers, we wanted their business, and we did not want to do anything that would drive them from us.

We ran right up against a proposition, however, that made us set up and take notice. A year ago we succeeded in getting the contract for supplying 150,000 pounds of butter for the U. S. Navy. We were led to believe that we could fill that order without any trouble. The specifications were looked over very carefully and we believed that we could comply with these specifications within the period of time named. We began to fill this order and found that what we called sweet cream was not sweet cream, at least not sweet enough. We found that when we applied the test that the Government required, that 15 cubic centimeters of Mann's standard alkeline solution should neutralize the acidity in 50 cubic centimeters of cream, that it was not up to standard, and a lot of our cream was rejected. Then we were up against it for sure. We had agreed to fill this contract within a certain length of time, and if we failed were to pay a forfeit. And so this question became a very interesting one to our Board of Directors, and we resolved to grade the cream. We were in hopes that we would draw some of the cream that the Centralizer was getting, and perhaps lose some of the poor cream that we could not use in filling this contract. We agreed to pay a cent and a half more for sweet cream than for sour cream. We were very much concerned about this proposition, as to how it would work out, as you can very readily see, but I am glad to tell you that it worked very nicely. We did not lose any customers, but on the other hand we gained a number and I want to say that the effect of grading the cream and paying a cent and a half more for sweet cream has improved the quality of our entire product. Then we were getting cream that half of it would not stand the test, and today by continuing this standard in grading cream, practically all of our cream will stand the test. This seems to me to be as good proof as one could want that grading cream can be done, and that successfully, not only to the creamery but to the farmer as well. So, now, I tell you I approach this subject with more confidence

than I did before I had had practical experience. We have found by actual experience that grading cream did not drive our customers away. We got a better quality and it was a paying proposition all around. Our people seem much better satisfied than ever before. When people say to me that one cannot run a gathered cream creamery and have the cream delivered sweet, all I say is that I know from experience that it is not so. I know that the farmer can keep his cream and send it in twice a week and deliver good sweet cream. This cream will do to manufacture into ice cream, if it is handled right. Do you know that some of the ice cream manufacturers are buying cream now to be used the first warm spell that comes next spring. If they can do that, cannot the farmer handle his cream so that he can deliver it at the creamery twice a week sweet? You creamery managers are not responsible—it is up to the farmer, but will the farmer do this if you pay him just as much for poor cream or milk as for good cream or milk? He will never do it and we can hardly blame him if he does not. If a man produces milk under good sanitary conditions and delivers it sweet, this makes that cream worth more to you, and you should be willing to pay more for it, and the reason you don't do it is because you are afraid for the reason that you think you will lose some customers. Take my word for it, if you do it and do it right, you will not lose any customers, but will be gainers. We know by experience. I believe this whole question can be solved by the creameries and the cheese factories. It is only a matter of giving each man a square deal. We have been able to sell this No. 1 butter for enough more per pound to pay the patrons one and one-half cents more for butterfat.

Another thing that helped us very much, and that was to use red and blue tags on the empty cans. Blue tags meant first grade cream, red tags second grade cream. We have kept up this practice of labeling every can of cream and I can tell you that we do not have very many red tags, for it has come to signify that a can with a red tag on is a kind of a disgrace to the one who furnished it. When we come right down to it, more of us do a whole lot of things in this world from pride, simply because we don't want the other fellow to get ahead of us. Pride is a good thing. It makes us want to do as well as the rest of the people, and if you can do something that will stimulate a little pride on the part of the farmers you will get a better quality of cream which will enable you to make a better grade of butter that will sell for more in the market, and that is what we are working for, a bettering of our product so that it shall bring the highest market price.

#### DISCUSSION.

Q. I would like to ask Mr. Lillie whether the patrons bring their own cream, or does he have it hauled?

Mr. Lillie: We have our cream hauled.

Q. How often do you run this time of the year, and in summer?

Mr. Lillie: The most of our routes are combined—cream and milk. In the summer time on most of the routes we have to run them every day because there is some milk, but in the winter only every other day. And then some of the cream comes in twice a week only, but the most of the

haulers at the present time run over their route every other day, or three times a week.

Q. I would like to ask Mr. Lillie if he samples the cream on the route?

Mr. Lillie: No, we believe in the individual shippers idea—when you sample it on the route, and test it there, the creamery may not get a square deal, nor the patron either.

Q. Is the alkaline test taken at the farmer's door, or at the creamery?

Mr. Lillie: The cream is delivered at the creamery and sampled and tested there. It must arrive at the creamery in proper condition.

Q. What about rejecting some? It seems to me that the larger creameries can do this, but the small creameries cannot. We try to improve our cream by rejecting poor cream.

Mr. Lillie: Possibly that way would accomplish the same result. I think, however, when a man delivers cream at a factory it should not be rejected but purchased for what it is worth. It seems to me that that is the better way.

Question: I would like to ask if it is practical to gather on their routes, three times in summer and twice in winter?

Mr. Lillie: I do not see how we could very well do that, especially as we have part cream and part milk. It would be more practical where there is no whole milk.

Question: I hear some of these fellows out here, several of the butter-makers claim that the score on this butter here was higher on that from gathered cream in proportion than from whole milk creameries. How is that?

Chairman: A good many of the whole milk creameries are not using starter—is not that a reason?

Mr. Grove: I will say this, that the creameries that are getting the best grade of cream are the ones that are using the least pains in making the butter. It seems to me that the larger creamery with a whole milk plant will make a much better grade of butter than the other fellows.

Mr. John Powers: I believe that every creamery in Michigan should adopt this system that Mr. Lillie has described to us this afternoon. I am convinced that the butter of Michigan could be improved better by this system than any other way. It is up to every buttermaker to get the right kind of cream if he wants to make butter of the best quality. The first winter I was in this state, some thirty years ago, I came from New York and went to work in a grocery store for a man. I had some experience before in grading up butter. One day a woman came in with a jar of butter and in my best way I inquired if she wished to sell it. I examined it and said to her, "All right, but I can give you only 15 cents a pound for it. "The Devil—what do you mean? Don't you know what good butter is—I want 23 cents a pound." Then she called over the proprietor and said to him, "What's the matter with this man? You know I make good butter." And so it is—one man brings in good butter, worth 24 cents per pound, and the next man comes in with a lot of butter that is not fit to make axle grease, yet he must have the same price, and if he don't get it, then there is trouble. So it is with the creamery. Only the other day I saw a separator that had not been washed for sev-

eral days, yet had been in regular use. In another instance, the man was soaking up an unwashed separator ready to put in cream the next morning. What can be expected from treatment of the milk and cream in this manner?

Chairman: Is it possible to take your test of the cream by the Lillie method where you cover long distances and put cans together?

Mr. Powers: In our creamery we do not sanction bringing cream in gathering can. A year ago last November we started in the gathered cream business. We fought the gathered cream system for years. The Chicago creameries went into our vicinity and were picking some of our best patrons—ten or twelve cases—and we had to do something. We were paying 5 cents per hundred extra for hauling, and we found that we had to do something to decrease expenses or go under. So we went into the gathered cream system. I thought we would have to have some gathering cans, but now after giving them a trial I would not advocate this. We had three or four hundred patrons, now we haven't half that number. This system of gathering cream on the road and putting it in a can is not policy, any way you can fix it.

And right here I desire to apologize to you for not being present yesterday when I was called upon, and I hope you will excuse me for not being present.

### SHOULD THE BUTTER MAKER BE MANAGER OF THE CREAMERY?

MR. J. F. POWERS, QUINCY.

Mr. Chairman, Ladies and Gentlemen: I do not have a paper prepared on this subject, for the reason that when I received, a week ago last Saturday, my catalog containing the program of this meeting, I found for the first time that I was down for this subject. Mr. Wilson wrote me and said, "Have you any objection to my putting you down for the discussion?" I wrote back and said, I do not have any objection," and so expected that I would be put down only on the discussion, and so I made no preparation especially in the way of a paper on the subject.

As I said, when I got the program on Saturday I found that I was down for a paper, but I learned it at a time when I was altogether too busy making my dividends to do anything else, but I will endeavor to give you a few thoughts on the subject, in an off-hand way, which I trust will, in part at least, atone for my failure to prepare a paper as announced.

We know in these United States of ours it is the privilege of every young man that wishes to rise up in the world and be at the head of any institution that he chances to associate himself with—I say it is possible for him to do it today. In the past many young men have started at the foot of the ladder in different enterprises and have risen step by step until they became managers of the institution with which

they were connected, whether railroad or manufacturing interest or anything else. So it is possible today, and it should be the duty and ambition of every young man that enters the business of butter making to commence at the bottom of the ladder and by industry and care and watchfulness rise to the highest place possible in connection with the business.

We have many young men that have started in the creamery business that have grown up with it. In the first year we find that he usually starts in as a common laborer. If he is in love with his vocation you will see him interested in watching every detail of the work and seeking to learn all he possibly can about the business. He will not hesitate to take a hand in fixing this piece of machinery and repairing that belt; or in fact, doing anything which comes to hand, to be done in a creamery. And more, he will do this in a cheerful and earnest manner which will show that he is not afraid or unwilling to do the most menial service about the creamery. If he is such a one, he should have the privilege of climbing up in the business and he will usually do so. In fact, young men of this stamp will not stay at the bottom. They will rise.

He is alert to learn all he can about the business. He wants to know the scientific side of the questions that come up for solution and so plans to take a course at the Agricultural College. He takes this course during the winter term, and goes back to this same creamery in the spring, prepared to do better work than ever before.

He has an eye on the future; he aspires to know more about the business; he wishes to keep climbing up and he frankly tells the manager that this is the case, and since he has so faithfully done what has been given him heretofore, he is allowed the opportunity of assuming more responsibility in connection with the work; is given more things to do now than formerly; is trusted to work out details which before were given into the hands of those of more experience, and all the while an eye is being kept on him that he does his work carefully, accurately and according to the most approved methods.

He goes on developing and shows at the end of the second year, that he is able to do good work and is capable of assuming considerable responsibility, and every creamery will give such a boy a chance.

Being a progressive young man he will desire to continue his quest for an education, not only in the line that pertains directly to the creamery work, but also in collateral subjects. He will learn all about the machinery of the creamery; how to take it down and how to set it up; how to care for it. He will learn how to look after the boiler and care for the engine, and especially, if he is going to be the manager of a creamery, the important ability of being able to meet patrons in a pleasant and satisfactory way.

At this point he may decide to take another short course at the Agricultural College, especially in creamery bookkeeping; also in the feeding and care of the dairy cow so that when he goes higher in his profession he will be prepared to go out and instruct his patrons in the care of his cows, regarding the ventilation of stables, how to construct barns, etc. He has by this time had over two years training and should have become sufficiently accomplished so that he can go out and take charge of a creamery of his own. The same carefulness that he has shown



previously is now exercised with greater diligence; he seeks to become more proficient in his work; he does everything fair and above board, and having won the confidence of the community for trustworthiness and square dealing, he begins to be a factor in that community, and gradually builds up a reputation for good work and honest treatment, which is in reality the secret of securing and holding a profitable and satisfactory constituency.

Now is not such a young man trained up in this manner better than half the managers that have been put in? And why, because he understands the business from A to Z just the same as a man who starts in as a telegraph operator in some remote town, and there gains an experience and has shown his proficiency in, and adaptability to, the work to such a degree that he is called to take a higher position and he has no difficulty in filling it. He can rise, and he will.

On the other hand here is a creamery that is a large one, very extensive. He could not take charge of the butter making and also be manager. While he might be capable of doing both it would be too much work for him, but in most of our small creameries the butter maker should be manager as he can give better satisfaction. I have been in the Quincy creamery for eight and one-half years, and I went into it as a butter maker, secretary, manager, carpenter, repairer and everything else. I have a set of tools and I look after everything; I do the collecting, make the dividends, pay the bills and have done all of the work pertaining to the secretary's office during all this time. It has been successful, not simply because I was manager but we are in good territory and we have tried to give everybody a square deal and when you are in good territory and set out right and do the right thing by all your patrons you can hardly fail to be successful.

There is only this objection to the butter maker being manager. It is the duty of all our creameries to give him a chance to go to the head and become manager, because he wants to get as high in his profession as possible. We have a great many butter makers, however, who do not care to get any higher, and it would not do to try to make a poor manager out of a good butter maker. The butter maker is better qualified for this than the man that has had no experience. So we can look at this in a good many ways.

Now in closing I want to say that I believe that the most successful manager of a creamery, taking all things into consideration, is the man who has begun right down at the bottom of the business; familiarized himself with all the duties connected with it; has a personality that will allow him to meet men and win their confidence and good will—such a one will make a better success as manager of a creamery than any other one would without this elementary training.

Mr. Wilson: I presume the buttermakers have all seen copies of the *Michigan Dairy Farmer* through the past winter, and have noticed that it has been very energetic in its promotion of this meeting. It has been the only publication that has ever done anything for us in the way of advertising the meeting of the Michigan Dairymen's Association. It seems to me that it would be a good thing for the executive committee to endorse a letter I wrote in relation to that paper continuing it as our official organ, and I will offer this as a resolution:

Resolved; That the *Michigan Dairy Farmer* be and continue to be during the coming year the official organ of the Michigan Dairymen's Association.

Motion supported, and carried unanimously.

A member: I would like to make inquiry as to our next meeting place—whether in a large or small place.

A member: It is not the size of a place, so much as the location. It should be centrally located. I think Lansing would be a good place—the College is there.

A member: Yes, but the last time we were there there was a difficulty in caring for those who attended.

Answer: That is so, but the College could take care of us better now than then. However, it might be better to meet in a smaller place.

No further discussion, a motion to adjourn was made and carried.

## FRIDAY MORNING SESSION.

9:30 A. M.—February 4.

CHAIRMAN, MR. LEONARD FREEMAN.

Chairman: We are a little late in getting started this morning, and as we have a number of interesting topics up for discussion, we will proceed at once. The first topic for discussion is, "Difficult Problems in Cheese Making," by Mr. Robert Johnson, of Ontario.

Mr. Johnson: Ladies and gentlemen, by way of a word of preface I will say that I was a little surprised to see our audience so small, and when looking through the room yesterday there was so many. On inquiry I found that yesterday the buttermen were in evidence. Now I want to say that I can not understand why the cheesemen do not take the same interest in the business as the butter men. They say that it is because the cheese interest is small, but I think that if the price of butter keeps soaring as it has of late, or even keeps where it now is, the cheese men will be the prominent men pretty soon.

My paper does not deal very much with the making of cheese but as I have been in the business for twenty-five years, and know some of the difficulties that the cheese makers are up against, I will dwell on these.

## DIFFICULT PROBLEMS IN CHEESEMAKING.

MR. ROBERT JOHNSTON, WOODSTOCK, ONT.

Mr. Chairman, Ladies and Gentlemen: One of the first problems that a cheesemaker has to deal with in the manufacturing of fine cheese, is the milk supplied for manufacturing purposes. For on the purity of the

milk supply depends to a large extent the class of cheese that will be manufactured. Now what are the conditions that should govern the milk supply? They are these—only healthy cows should be allowed to be milked, they should have plenty of clean nutritious food, plenty of pure water, milked in a cleanly manner, milk cooled after milking to a temperature of 60 to 65 degrees, conveyed to the factory in clean cans. If these conditions were observed this problem would be solved.

Now what are the actual conditions that the average cheesemaker is working under? The patrons of the factory do not pay very much attention to the health of the dairy herd, they allow them to eat all kinds of feed, and a stagnant pool is the only water supply. Only attention enough is paid to the milk to keep it from becoming sour and it is delivered in cans 25 per cent of which should be condemned. The result is that the milk is delivered at the factory tainted and over-ripe, more especially in the summer months, and the cheesemaker is expected to make a fine cheese out of milk that he has not had a chance to control. The result is his curd will be gassy and in all probability bitter, and if the buyer rejects the cheese he has to stand the loss because he has not the ability to manufacture a fancy article of cheese out of the raw material furnished him. The only way to remove a difficulty is to remove the cause. Now you have been working along this line for a number of years by your educational system of Farmers Institutes, Dairy-men's Conventions, and providing literature for the patrons of cheese factories and creameries, and we are beginning to see the results. We find some of our patrons taking enough interest in the business to put into practice the result of your investigations and the result is that they are looking after the health of their cows and providing them with pure nutritious food and pure water and they are finding out that it pays. I hope the day is not far distant when the patrons that do not take the best care of their milk will not be allowed to furnish milk to a cheese factory or creamery.

The second problem that I will deal with is the moisture question. What amount of moisture should be retained in the cheese to insure a fine article? I have observed that you in this state make a large percentage of what we term "soft cheese." I have found that if these cheese are carried for any length of time that the flavor turns bitter. Now what percentage of moisture should be retained so that if the cheese should have to be carried they will preserve their flavor and color? In Canada we say not over 35 per cent. Now the difficulty is how do we know when we have the required amount of moisture. This is not a difficult thing to know providing you are dealing with pure milk furnished in good condition, but we have to deal with milk in the condition that it is furnished to the average cheesemaker. We must always bear in mind that it is heat in conjunction with the developments of acid and action of Rennett that shrinks the curd and expels moisture. Then if we are to have the best results we must study to keep those factors in the proper proportion. And it is only the expert maker that in dealing with over-ripe milk, which means milk with the acid out of proportion with the other agents, that is able to bring about normal conditions and produce a merchantable cheese. The expert maker will cut his curd finer, cook quickly and stir thoroughly as the only means to over-

come this condition. Normal milk should be handled with the object in view of conserving all the moisture that goes to make a fine cheese. Therefore the milk should not be allowed to develop more than two-tenths of one per cent, of acid, cooked slowly, taking about two and one-half hours from setting to dipping, as that length of time will insure a good cook and your curd can be thoroughly stirred without any loss of moisture. If the maker has his curd properly cooked he can control the moisture contents so that the finished product will be of a fine flavor and color.

I would like to make a few suggestions:

First—That all cows supplying milk to cheese factories or creameries should be inspected by a qualified veterinary surgeon; that all stables, utensils and appliances of the patrons should be inspected as to sanitary conditions; that all milk supplied by patrons should be cooled as quickly as possible after milking to 60 degrees. (This applies to the evening milk).

Second—That a thorough inspection of the milk can be made at the factories and all rusty cans condemned; that pastuerization of the whey returned to patrons be adopted at all cheese factories; that a thorough knowledge as to the production and care of the milk be one of the qualifications of the cheesemaker, so that he may be able to impart to the patrons of his factory information along these lines.

Third—That your cheesemaker should make quality the first consideration instead of quantity so that in the near future you may with pride say that Michigan is the Banner Dairy State of the Union.

#### DISCUSSION.

Chairman: According to the program, Mr. R. L. Ives is scheduled to lead this discussion. Is he present? He is not present, and I will call on Mr. Haven to open the discussion.

Mr. Haven: I should like to talk of the conditions that trouble and confront the cheese inspectors. One cheesemaker once asked if I had any objection to his scoring the inspector. I recall Mr. Johnson says the milk should be cooled to 60: that refers to the evening milk does it not?

Mr. Johnson: We would like to have the morning milk cooled, but there is not the chance; but under ordinary conditions if it can be done, we would like to have it. We have our cheesemakers so they can take care of themselves, and our instructions are to the patrons. As far as our cheesemakers are concerned, the average cheesemaker will take care of the milk in the proper way, providing it is delivered in any kind of decent condition, so it is up to the patrons to see that it is delivered. The patrons should be under strict inspection as well as the man who delivers milk to the city. Our cheesemakers have full power to go to the cheese farm and see to it that everything is in good working order as it should be. This is a police regulation.

Mr. Haven: Does the cheesemaker have that authority?

Mr. Johnson: No, it is the inspector. We have eleven inspectors for 211 factories. Our cheese line runs from St. Thomas to Dungan, a strip of territory thirty miles wide. We make 17,000 pounds of cheese in that district.

Mr. Haven: Think of it—211 factories and eleven inspectors! Why in our whole state we have only two inspectors.

The troubles of the cheesemakers in many parts of our state and especially the southern part, is the matter of yield. There are cheese factory owners, if they came to hire a man, and three men presented themselves, they would say, "What yield did you get last year?" And the man that got the best yield is the man that would get the job. And put another way, a man might own several factories—one factory might get milk testing 4%, another 3½ and another three per cent, and if the three per cent milk factory did not get the yield of the four per cent factory, the next year that man would be minus a job. Our cheeses do show too much moisture, but there is a reason for it.

Mr. Johnson: Haven't you got a law that says that creamery butter shall have only so much moisture?

Mr. Haven: Yes, we have such a law for butter, but in the cheese problem the excess shows up more than in butter. The test for our cheese has not been along the line of excess of moisture.

Mr. Webb: How often do you pay?

Mr. Johnson: Once in two months. With the majority of cheese factories, we would sooner have the cheese in storage than factories, especially in hot weather.

Mr. Webb: Cured in transit.

Mr. Johnson: Yes sir. Fit for the counter in two weeks. But we do not have the excess of moisture that you do.

Mr. Webb: We get as much for the holes as we do for the cheese.

Mr. Johnson: Yes, I know that. The only difference is, you have to rent more space in storage than we do, and don't get pay for it.

Mr. Pickett: We live in a section that turns out quite a few cheeses—the factories are numerous. We are all on competing territory. Now, in regard to the moisture matter. Our trade calls for soft cheese. The public are willing to pay for that soft cheese, and why should we not supply it? We are bound to make cheese with a good supply of moisture.

In regard to the yield, that is an essential thing. During the season the cheesemaker ran behind half a pound to a pound in a month. A neighbor who gets a better yield can pay 68 cents while I am able to pay only 64 cents. Now if I had that other six cents I could get out all right. It seems to me that in a case like that we must have a sort of board that will be an authority by which a line can be drawn on the moisture, but the consumer wants the cheese, and we want to sell it, and what are we going to do?

A member: How does the milk compare?

Answer: It runs about alike. It seems to be in the texture of the cheese.

Mr. Johnson: That question is not discussed among our cheesemakers or conventions. Quality is first every time, and as a rule when I hear of a man that makes a cheese after a certain quantity of milk, I always prefer the patrons weight.

A member: I think I must be the man Mr. Johnson is referring to. I would be very glad to have Mr. Johnson inspect our scales. We have had our State Inspector, and I think our scales will compare with the average run. Our yield has been low, but I do not lay it to the scales.

Mr. Johnson: I say that in our country, where we do not run to moisture, where our cheese contents will contain the same moisture content, and where we do not, like you, carry an excess of moisture, it is different. If a man can load his cheese up with water, and sell at 16½ cents. I suppose that is all right.

Question: Is it all in moisture that makes the over-run, or is it in a man's ability to get the most out of his milk?

Answer: One man can get 10½ pounds, and another 11, and the man that gets the 11, his cheese will be drier than the other fellow's for the reason that he has smashed his curds up and lost so much fat, etc., but I am talking about things under normal condition with us. Where the people are feeding for quality, then the average does not vary but very little.

Question: How are we going to govern the per cent of protein on 4% milk, and give the same per cent of protein in 3%—how will we control that?

Answer: I do not know whether the time will ever come when a man will be paid for the casein and fat; that is, paid for them both. We must have some way of getting at the casein in the milk. When we get a simple method of paying for milk according to quality, perhaps that will be. I believe that the milk should be paid for according to the quality. Here is one man selling 3% milk, and another 4% milk. The 4% milk will make more cheese than the other, so I do not see why the man selling 4% milk should contribute to the other man's credit.

A member: One man says casein runs along the same percentage in all milk, and another says not. Until we can test casein I don't know where we are at.

Mr. Horton: Mr. Johnson, speaking of the difference in yields, your difference is not more than one-tenth in normal cheese. In our string of factories we found that our yield will vary very close to one pound in the twelve factories. A man who can make good quality and a good yield is the man we want. We want quality, but we have got to have quantity to meet the competition. We are in competition with condensers, and these factories must pay their patrons so that they are satisfied and this means that we must have the yield. We keep some cheesemakers that we do not get as good a yield from as from some others, simply because their quality is uniformly good. But what we want is a good merchantable cheese—that is the first thing—it is a matter of business. It is not a matter of ethics. We must make our business good, and must pay our dividends.

Mr. Johnson. I don't blame you for getting 16½ cents for your water if you can incorporate it, and the dealers are willing to pay for it.

Mr. Horton: I do not think that water is the whole cause of the extra weight altogether.

Question: Where do you get the extra weight? Is it not in keeping the fat instead of losing it through the handling of the curds?

Mr. Johnson: Any expert cheesemaker should be able to do that.

Mr. Horton: But the demand is for a cheese that will produce weight.

Mr. Johnson: You don't mean to say that they will pay you as much money for second grade cheese as for a fine quality of cheese?

Mr. Horton: We have to have quality, but we must have yield with it to compete.

Mr. Johnson: My experience in cutting through some of the cheese of your state that has been carried, is that your soft cheese had a flavor that was wrong. I know something about butter, and I know that when we get an excess of moisture in butter, we get off-flavor. Our friend, Prof. McKay has been working along this line, and it has been discovered that where there is an excess of moisture, you are liable to spoil both your color and your flavor of cheese.

Mr. Horton: Our cheeses are made mostly for immediate use—those that we know are to be used later must be firmer. The cheeses that are used immediately will cut quicker with the moisture in them. We have some cheese on the block in three days, and they cut nicer than those that had set for three weeks. This was the special hold of one of our cheesemakers. His father before him did the same.

Mr. Johnson: That may be, but you could not sell our local trade cheese less than two or three weeks old.

Question: If the milk was bought on a butterfat basis would not the thing adjust itself?

Mr. Johnson: Our people are Holstein people. There is a sprinkle of other breeds, but the increased quality of milk which we get from the Holstein more than pays. There is very little varying in our factories. In the outlying districts, where dairying is made but a sideline, there is more varying.

Mr. Horton: When you pay entire attention to quality the milk if not must come from a better quality of cows?

Mr. Johnson: That is a debatable question. Milk that averages  $3\frac{1}{2}$  per cent makes a good quality of cheese. Our cows all go over two per cent milk. We are breeding for butterfat as well as quality.

Question: How much are those cows worth?

Mr. Johnson: From \$1,000 to \$1,500 each, and pay duty, three months old. The man that stays by Holstein cows makes the money. When you come to the creamery districts, it is a different proposition, but personally, even though I were a creamery man I would still keep Holstein cattle.

Question: What effect does the atmosphere have on milk for cheese making?

Mr. Johnson: I do not think that the atmosphere has anything to do when making cheese. If the milk is made cool after milking, and lid put on the can, to 60 degrees, I do not think you would have any trouble with your milk.

Question: The trouble with many factories is not the milk itself, but in the condition of the milk at the factories. We get a better yield of cheese in the fall than in the summer. The trouble is that the patrons do not take the right care of the milk so the quality is different in the production of the cheese. When the quality of the milk is different, there is a difference in the production of the cheese.

Mr. Johnson: You have a greater loss of fat in over-ripe milk—milk not properly taken care of such as you have in the summer. In the fall months you have a larger per cent. of butterfat than in the summer. Ten years ago with us it was a usual thing to get gassy milk from the 1st of June on to September, but I do think it is that way with us now.

Mr. Murray: I would like to inquire if during the hot season his yield is less? During the last few years in Wisconsin, during the hot months, milk tested less in casein. This they found to be more especially so during a hot dry season than in a normal season.

Mr. Drake: I want to say a word from the farmer's stand point. Mr. Horton struck the keynote of the whole question when he said that he had to make the farmer's satisfied. In Canada they are making cheese for the export trade, and it has to be made as that trade wants it. We are able to sell all our cheese at home—we consume it ourselves. Not a pound of our cheese goes to Europe.

Mr. Johnson: You sent some skimmers over there.

Mr. Drake: Not from here.

Mr. Johnson: Perhaps not from here.

Mr. Drake: To continue what I was before saying, the cheesemaker must make the business pay in a way so that it will be profitable to us to keep cows and that is what Mr. Horton is trying to do. He will not let us have even enough cream for our coffee.

Question: If the whole of the butterfat is retained in the milk, will that not make a moist cheese? It is the fault of the cheesemaker in working his curd. Two of our factories had two of these cheesemakers who were instructed and got their learning under a former cheesemaker that started our factory, and they get about the same yield as he did. There was about the same admixture, and they said that he was whipping all the fat out of the curd. The yield fell short. If he had retained that fat, would not that fat have helped the moisture?

Mr. Johnson: A man that does not understand making cheese should not be retained. The man that smashes his curd up must note the conditions—if it is a fast-working curd, there must be quick action or the acid will get ahead, and then you will have a sour cheese. Cheesemakers should be able to handle their curd so as to conserve the moisture in the fat; if he can not do that, the quality of the cheese will be poor.

Question: Can you tell what the cause of sweet cheese is—there are a good many factories that have them—they never develop any flavor.

Mr. Johnson: This is cheese in which the lactic acid has not been far enough advanced to hold the curd down; that is, to kill the other gases. "Fruity" cheese, and other kinds, as well as "sweet" cheese, come from poor milk. Prof. Harrison has been trying for several months to find out the exact cause of bitter flavors. He says that it is a germ that grew on trees. Maybe that is so, but somehow it always got in the cans and it seems to have been carried from year to year in the same factory. They made better in the winter time, but every first lot in the spring was bitter. Dirty cans are the cause of a great part of objectional flavors, fruity and similar kinds of cheese, and the trouble is that the development of the acid goes so far and then stops, never develops to the point where it should, and then the cheese will stay bitter.



**"MAKING A CLOSE MEATY TEXTURED CHEDDAR CHEESE."**

MR. E. A. MURRY, BYRON.

Mr. President and members of the Association: I have been requested to read a paper on a close made meaty cheddar cheese. Now I will in my humble way try and demonstrate how to obtain that class of goods. As I heard a remark once made at a Dairymen's Convention, a firm cheese was a grindstone.

Now gentlemen and brother cheesemakers, this need not be the case if carefulness and diligence are put into practice. I have operated cheese factories in Ontario, Canada, also in Wisconsin and the last two seasons in Michigan and I find what will apply in one place will work in another, or nearly so, as you will find some differences in different localities.

The first point to be observed is to obtain the purest milk possible; second, the necessary utensils for manufacture; third, a competent party to make the cheese; fourth, a good room for curing the cheese where the temperature can be controlled.

Select nothing but No. 1 milk. Having your milk all in the receiving vat it should be heated slowly to a temperature of eighty-six degrees. It is at this time that the cheesemaker demonstrates whether he is master of his business. He should now make a rennet test of his milk to ascertain the development of lactic acid. After making such test he is then in a position to know when to add the rennet so that the curd will have plenty time to firm or cook as the term is often used.

In setting the milk enough rennet should be used so as to give a thorough coagulation in from fifteen to twenty-five minutes according to seasons of the year. Fifteen minutes in spring and early summer, twenty-five the balance of the year.

Cutting the curd.—It is ready to cut when it splits clear before the finger. I favor cutting before curd becomes too firm. I think there is a waste in yield when the curd becomes very hard. In cutting the curd I cut first with the horizontal knife once, perpendicular twice or three times according to conditions of milk at time of setting.

After cutting, the curd should be stirred very gently with the hands at least five or ten minutes before using the rake. Heat should not be all turned on at once, but, very slowly taking about thirty or forty minutes to firm or cook the curd. Fast cooking is very hard on the average and should not be resorted to, except in cases of fast working curds.

The curd should be stirred at least fifteen minutes after steam is turned off and often enough after to keep the curd thoroughly separate or broken up until whey is drawn. This process should take from one and three quarters to two and one quarter hours. At this stage the curd should have sufficient acid to show from one-eighth to one-quarter of an inch of fine silky threads on hot irons.

If your curd shows that it is developing acid very rapidly draw off

a portion of the whey as soon as vat is heated up, as this gives you control of the vat.

Greatest care should be taken at this stage of the process and I would strongly advise where you do not use drainers or racks you should remove the whey at the earliest stage of acid development. After the removal of the whey the curd should be stirred until thoroughly dry before it is allowed to mat.

There is an idea among a great many makers that if they stir their curds dry it is hard on the average. This is not the case. In my experience curds that were not thoroughly stirred always give a very poor average. If you want to produce finest cheese you must stir your curds dry. It will give finer texture, more meat and finer flavor, which points are essential in fine cheese.

If the process is strictly carried out up to this point your cheese is practically made.

Matting the curd.—After the stirring process has been completed, the curd should be allowed to mat. As soon as matted thoroughly, it should be cut in strips about to six inches wide to expell moisture and should be turned often so that no whey gathers on the curd, piling three or four deep if necessary.

Tests of the curd on the hot iron should be made from time to time and when sufficient acid is obtained, the curd should be milled, which should be from three-fourths to one inch, according to condition of the curd.

After milling, the curd should be thoroughly stirred exposing it to the air if the surroundings are pure and sweet and the temperature of the curd high enough so as not to get too cold. Your curd at this stage should have a nice, smooth, silky, mellow feel.

The curd should not be put to press at too high a temperature. The temperature should not be over eighty degrees or lower than sixty. The cheese should not be bandaged for at least thirty minutes after being put to press. A word of caution at this time in pressing. Do not put much pressure on the curd at the start, but, press gradually for ten or fifteen minutes, then, you can put full pressure on. The cheese should remain in the press twenty-four hours if possible. After removal from press they should be examined, and if any defect it should be attended to and pressed until every one is neat and stylish.

Now this is intended where you have conditions under your control and it should be the aim of all patrons to supply nothing but first class milk, in a first class condition. The other conditions are in the hands of the cheesemaker, factory manager or owner.

#### DISCUSSION.

About how many pounds of milk do you take to make a pound of cheese?

Mr. Murray: We run around ten to ten and a quarter pounds.

Question: I would like to ask of the gentleman who speaks for Mr. Thompson what he uses.

Answer: I think about 9.35; that is, for about nine months.

Question: You never have any trouble with bitter or off-flavored cheese, do you?

Answer: We do not have any bitter flavors. I have a couple of buyers here who have handled all of our cheese for some time past, and either of these buyers can tell you in regard to that. As the cheese industry is at present here in this state, we must not go to making cheese such as Mr. Murray speaks of. At the present time all our output is sold here in the state, but when you go out on the open markets with our cheese, I do not believe but what Mr. Murray is making the kind of cheese that we must make here.

Mr. Smith: I believe that is what we must come to. The cheese that Mr. Murray is making will keep almost any length of time, and if we make more cheese than is demanded by the local trade; that is, if we export it, this is the kind of cheese we must make.

A member: We have local customers that come to us for their cheese in the fall, in September, and carry it until April and perhaps May, and it is still good cheese.

Mr. Murray: Speaking of qualities of sweet cheese, I have sold about \$17,000 worth. One of these cheeses was kept by a gentleman for over two years, and it was just fine.

A member: Mr. Murray is giving the very system, but here we have another class of cheese. I believe that any cheesemaker will agree with me when I say that a stirred curd cheese which is right, if your milk conditions are right, and your weather conditions are right, makes an elegant cheese, but I don't believe that there is a cheesemaker anywhere in the country that can day after day make a uniform cheese by the stirred curd method. When dealers tell about rather having soft stirred cheese, they happen to get hold of good ones. Perhaps the next lot is just as far the other way. Nothing will tend to improve the cheese industry as to content and uniformity until we get on to some uniform basis of manufacture. I will guarantee that twelve cheesemakers in Michigan taking twelve vats standing side by side, and no two men will handle the curd the same. The cheese may be alike, or it may not. I want to tell you that we will never get on a uniform basis so that our cheese will come out alike unless we adopt some uniform method of manufacture, and I see no other method except the mill curd method. We have some factories in our state where they have an excess, and they ship to outside markets. Instead of milling this cheese down to make them firmer, and at the same time more mellow, they will cook it down, cook out the excess of moisture, and do not leave it so that it will compete with the Wisconsin cheese.

Mr. Hull: I want to come to the defense of the stirred cheese. We are competing with the Wisconsin market. Our cheese is going there every week. They tell us that they want them open, porous and richer in flavor. They have an excess freight to pay, and we can get the top prices. We get a better yield on that cheese, there is a good demand for it, then why not make it? I think that for eating purposes our cheese is just as good as the very close meated ones.

Question: I would like to know if these are not close meated.

Answer: They do not have great big holes; buckshot holes are different.

Mr. Horton: The difference in yield in stirred and curd varies with your milk. We have one factory where we use curd all through the sum-

mer months. We have to use that on account of the gas. Whether it comes from creek bottom or because the patrons do not take proper care of their milk, I can not say, but our maker was getting poor yield, and had to cook pretty hard to make them stay down at all by the stirred curd process, they got softer, and now he gets a better cheese and a better yield than by the stirred curd process. That is the difference in the quality of milk. If that milk was normal, if the milk is from territory on the upland it would be different. Our patrons want soft cheese. We can ship it quicker, get our money back quicker, and pay our patrons quicker.

Mr. Reed: Do you prefer an 86 degree heat for cooking on milk that is over-ripe?

Answer: No, where you have over-ripe milk, which we should try to avoid if possible, I would set it at a lower temperature. It gives you a chance to get the curd worked, and protects against the development of lactic acid.

Mr. Bryan: How much extract do you use to a thousand gallons of milk to develop in fifteen minutes?

Answer: About four ounces of Hansen's Rennet Extract.

I should think the milk should be very ripe if he can coagulate it ready to cut in fifteen minutes.

Mr. Johnson: Do you find any difference in districts as to the amount of rennet used?

Answer: Four ounces is quite sufficient for us.

Question: Would you not give more acid in your milk in the spring to curdle in fifteen minutes than in the summer?

Answer: No, not with me. There might be a difference there. We are making cheese the year round, and we have fresh cows coming in at all times of the year. But where you have the cows all fresh in the spring, your milk will naturally develop lactic acid more rapidly, consequently under other circumstances it might. We have practically the same number of fresh cows all the time.

Question: Would it not ripen your milk a little more in the spring for quick ripening cheese?

Answer: No I would not ripen it any more. If you should ripen your milk more than that, you will not get the same mellow cheese that you do otherwise. Cook slowly, and you will have a nice quick curd cheese.

A member: I think there is more yield lost by cutting curd soft than by cutting it firm. We all know that butterfat is scattered throughout the mill before it begins to coagulate. It stops at the place where the milk begins to quicken. If we get that worked soft, we naturally disturb these butterfat globules. I think there is more yield lost by cutting them soft than by cutting firm because the butterfat will be left more in the cube, and if they are not left in the cube after being expelled in the whey there is no saving.

Answer: You misunderstand me—I didn't mean to cut the curd soft. I want the curd to split nice before the finger. When it will do that it will not be soft. What I meant was, when it got so firm that when you began to cut that curd it all split and broke up.

Governor Warner: I believe the conditions are different in different

sections. If you have a surplus of cheese in any one section, so that the supply is greater than the demand for soft cheese, you must make a firm cheese, for it would be just as difficult to sell on a Michigan market, Canadian or Wisconsin made cheese, as it would be to sell our cheese over in Wisconsin or Canada. In short, the thing we want to do is to use good common sense and meet the conditions of the public with the quality of an article that they request. I am sure that in time, if we have any surplus of cheese, we must make those good firm cheese which the buyers out of the State want.

As good cheesemakers, we must be sure that we get milk that is as good or better than the average that comes to the factories, I know in my factories it is taking pretty nearly ten pounds to make a pound of cheese.

The test of fats, however, averages different in different factories. I have known of its varying from three to four per cent in my own factories—from 3.4 to 3.8 and that makes a difference of 10 per cent butterfat and 10 per cent is a good deal.

I am here more as a listener than with any desire to take part in the proceedings, but nevertheless I am very much interested in this discussion.

Question: What is the average of your factories?

Governor Warner: They will run  $10\frac{1}{2}$  pounds, and have never been able to get below 10 pounds for the year.

Question: A cheesemaker said he got  $8\frac{1}{2}$ . Can you tell how?

Governor Warner: He is making soft cheese. He said his fat tested 4%; that accounts for the yield. I never had fats that ran over 3 6-10. The average of the milk affects the average of the yield about as much as anything.

A voice: New fresh cows would help that out some. In going over our tables and comparing them with temperature we find that our poorest yield was in the severe weather when the milk was frozen or very much chilled, and that seems to have as much to do with yields as butterfat. The general average of butterfat runs around 3 7-10.

There was a man here who said he got as high as 7.71. I don't know whether he will tell how it is done or not.

Mr. Thompson: All I can say is, I had so much yield from the milk and that is all I know about it. When the cheese is made it averages 7.71 net to the stockholders.

Question: Is there not a good deal in the milk and also a good deal in the cheesemaker?

Mr. Thompson: I presume that this is so.

Mr. Haven: There is a variation. In some counties we have it will run from 3.20 up to 4.40 within ten or fifteen miles, so we judge the quality of the milk has much to do with the difference.

Mr. Chairman: The next subject on the program is "What Qualifications are Necessary to be a Good Cheese Maker?" by Mr. William Reed of Perry, who will now discuss the subject.

## WHAT ARE THE NECESSARY QUALIFICATIONS OF AN UP-TO-DATE CHEESEMAKER?

MR. WM. W. REED, PERRY, MICH.

Mr. President, Ladies and Gentlemen: Mr. Wilson, our secretary, has kindly requested me to write a paper for this convention on the qualifications necessary to become an up-to-date cheesemaker. At first, I hesitated and even wrote him to say it was impossible for me to do so; but remembering the old saying, "He who hesitates is lost," and although there may be others present who may be better qualified to write this paper, I have at least decided to do my best. Now, there is, as we all know, strong competition, not only among manufacturers of automobiles, furniture, etc., at the present time, but of cheese as well, and it will thus be readily seen that if a man expects to be up-to-date not only in cheese making but in other trades as well he must most assuredly be at *his best*. The best manufacturers will today travel far for the best machinery and will pay fabulous prices in order to receive same.

We need the best teachers in our schools, colleges, etc.; then, why not the *best* men for the manufacture of our cheese. What the world wants or needs today is the *best* in everything.

In the making of cheese there are at least three things to be considered: the material, the maker and the method. First, we need the best material in order to make a first class article; whether it be cheese, furniture or anything else. The best cheesemaker in the world could not make a first class article out of inferior milk. The up-to-date cheesemaker is one that sees to it first of all that the material he uses is first class, and is cared for in the proper way. In order to do this he must first in an unassuming way school the farmers; that is, he must point out to them the necessity not only of caring for the milk after it is in the cans, but also to see to it that the cows' udders are clean and that the hands of the milker are thoroughly cleansed before they begin the process of milking; also that the pails of milk are never left in a dirty stable or yard while milking other cows as the milk readily acquires the taint of the stable. In fact, too much attention cannot be given to the production and care of milk in order to make a first class cheese. Some patrons are quite apt to become careless, and carelessness on the part of the few may result in much unnecessary labor and may be the means of spoiling a lot of cheese. Nor does a man need be a crank or even crusty in order to accomplish this. Severe criticism will profit little or nothing; abuse and ill treatment only make matters worse; kindness and encouragement will do far more toward accomplishing the desired results.

In illustration I recall a home in which there was a very kind wife and mother; it was a farm home and the work was always trying, for the farm contained some 500 acres, and of course it was necessary to keep hired help; the keeper of the home was not provided with the best of wood for the range. She had often remarked that "Stoel," her

husband had always provided her with the kind of wood that was easy to cut and split; in fact, it was usually a very unsound stump or log, that found its way into the kitchen wood-box. On a certain day they were to have threshers for dinner and Stoel thought it would be a good time to test the wood proposition, and so cut some very crooked, snarly, green apple boughs and filled the wood-box, but said not a word, though he fully expected to hear about them at the noon hour. The noon hour came and the men were called in to dinner; it was ready on time and thus far no word of complaint. The table was waited on in a becoming and kindly way—but not a word about the green apple wood. At last, Stoel could stand the silence no longer and asked: "Well, Tabitha, how was the wood?" To which she very kindly replied: "It was just fine, Stoel, those little crooked sticks fit around the pots and kettles so nicely"—and she won the day. So it will be found in the dealings with the farmers that a good word—a word of encouragement will do far more toward securing the best results than abuse will do.

Now, without entering into a discussion of the many little details in connection with what has been stated, let us pass to the maker himself. It is the cheesemaker we want to bring before us, not merely a cheesemaker but an up-to-date cheesemaker. It is he who is responsible, for we may have the best of material and appliances and utterly fail in results if the cheesemaker does not know his business. There are a great many things he ought to know—there is one thing he must know. He must know how to make good cheese. He must be a man. He must be a manly man. As much need for a man in the cheese factory as a man in the bank. He must be honest; only by the fairest dealings with the patrons of the factory can he look for their support and assistance. The man who succeeds and is in demand will have the confidence of the men with whom he deals. He must be wide awake and have a good supply of common sense. There is little place in the working world today for the dreamer, and no place in the cheese factory for him. He must be punctual, the patrons have a right to expect this of him. He cannot afford to be negligent; to neglect is disastrous. The work in the factory must be done well and on time.

A certain cheesemaker of my acquaintance hired out as helper in a large factory, and when he began work, he said to his employer, I will do my very best. It went along two or more months and while doing some lifting in and about the cheese he received internal injuries and became seriously ill—so ill in fact that his life was despaired of. He sent in his time and was paid off at a dollar day; and when he lay in bitter pain he tried to smile as he said: "Well, anyway, I'm very thankful to think I have done my best, even though I have had to suffer for it."

It is a good rule to always be worth more than you are actually receiving. A man cannot afford to leave work undone that ought to be done and that he would do if he were receiving more pay. The surest way to higher wages is to do all your work now and do it the very best you can. Then, a cheesemaker to be up-to-date must be neat. His position demands that he be clean; he is not making brick or building material; he is not digging fuel for fire; he is not turning over the soil for the seed; he is making food for the table. He must exercise great

care and skill, since he is a food maker. A man cannot be slouchy in a cheese factory and be up-to-date.

Now, after all that has been said, he must essentially be a maker of good cheese in order to become an up-to-date cheesemaker.

## BEST METHOD OF PAYING FOR MILK AT CHEESE FACTORIES.

MR. N. B. HORTON, FRUIT RIDGE.

Mr. Chairman, Ladies and Gentlemen: Before taking up a direct discussion of my subject, I will speak briefly about the five constituents of milk of special importance in cheese making—Fat, Casein, Milk Sugar, Salts and Enzyms. Water there is sure to be enough of, the methods of manufacture causing the variations in the percentage in the cheese and not the milk content. Albumen remains in solution and passes out for the most part in the whey.

The fat content of milk varies greatly in different individuals and breeds, at different periods of lactation and from various exterior causes in the daily routine of every cow. An average of about .36% remains in the whey but this, of course, varies with different cheesemakers and their method of handling.

Milk casein is probably of first importance, inasmuch as it is due to its peculiar quality of being coagulated by the enzyme or chemical ferment in the rennet, that we are enabled, at all, to make cheese of our type.

Milk sugar passes largely into the whey but is of importance from the fact that it is easily converted into lactic acid by certain forms of bacteria.

From good authority we learn that in the making of cheese, the soluble calcium salts are very essential to the coagulation of milk by rennet extract.

From the same authorities, we learn that Enzyms are chemical ferments, with the power to produce changes in other substances with themselves undergoing change. We have them present in normal, fresh drawn, pure milk.

From this knowledge of the ingredients in milk we can easily see why all of the newer methods use fat and solids for the foundation of their figures.

Having thus summarized the ingredients of normal milk as relates to cheese making, I will take up my subject proper. "What is the best method of paying for milk at cheese factories?" In considering this subject we are immediately confronted with two problems. First, how can we pay each farmer for his milk so that we can give him his exact proportion of the proceeds accruing to the patrons as a body? Second, how can we best pay so as to please the great majority of our patrons and thus get as large a run at our factories as possible from our particular territory? The same problems will be met whether we buy the milk outright or run our factories on the cooperative plan.



From Van Slyke & Publow, writing on the Science and Practice of Cheese-making, I find that five methods have been proposed for paying for milk at cheese factories. In the order of their introduction they are: Weight of milk—Amount of fat in milk—Relative values of Fat and other Cheese solids, based on yield and composition of cheese—Modification of Fat Method to include part of the milk Casein—and Amount of Fat and Casein in milk. The first method of paying by weight seems to have stayed longer in use in this state than in some other dairy sections. We advance in defense of this method that it is simple, requires the least time of any in figuring our monthly dividends and on account of its simplicity is easily understood by all our patrons. Literature on milk has not been freely circulated until the past few years and there are many who are afraid of something that they do not understand. At present, I think I am safe to say that a great majority of our patrons are in favor of this method as opposed to those more complicated and less easily understood. Writers and individuals opposed to this paying for milk by the hundred claim that giving the same value to all milk, no matter what its make up, discourages the breeding of cows to give a higher fat and casein containing milk. That it takes as a foundation, that all milk is of equal cheese-producing value and that it breeds criminals by encouraging the addition of water and the removal of cream. They also contend that milk of varying fat and casein content give different yields very nearly in proportion to the amount of these ingredients the milk may contain. These contentions are all true, but until a method comes into general use, either by state law, or better understanding among our patrons, that will be more satisfactory to them, we will no doubt stay by this old and tried way of paying at our factories.

In about 1890 Dr. Babcock invented his test for butter fat. The value of this test was at once understood in paying for milk at creameries. As knowledge was gained on Dairy Chemistry it was found, however, that the yield of cheese per hundred pounds of milk did not increase in the same proportion as did the butterfat in different batches of milk. Some have claimed that when we consider both increased yield and higher quality, that the fat content is the true test for the value of the milk.

The third system was also worked out by Dr. Babcock and in introducing it he says, "It is not sufficient for a system to give the true yield from each patron's milk, for this makes skimmed-milk cheese equally valuable with that from the richest milk. The perfect system of making dividends in cheese factories must include, not only the amount, but also the relative values of fat and other cheese producing solids; with such a system each patron will receive his just proportion whether he brings skimmed-milk, watered-milk or cream." In this method he gives fat a value of 6.6 as compared with a value of 1.0 for the cheese solids net fat. He worked out a table, based on the yield of cheese and relative value of cheese solids for milk containing different percentages of fat from 2 to 6. The only additional labor of this method over the fat method would be the taking of a lactometer reading of each patron's milk.

About 1893 the Ontario Agricultural College Dairy Department found that they could come more nearly to the value of each patrons

milk in making cheese by adding two to the fat content. Thus a patron whose milk tests 3% butterfat would be paid on a basis of five and a patron whose milk tested four would be paid on a basis of six. This probably is an improvement over the simple fat test method as it recognizes the fact that a pound of butterfat in 3% milk is of greater value in cheese production than a pound of fat in milk testing 4% and under ordinary circumstances may very nearly express their difference. In opposition it is held that this method does not recognize any casein over 2%. According to chemists we are informed that the four per cent milk has nearer 2½% casein and that this should be recognized. They claim that this method gives the preference to milk of low fat content and would thus have the same failing as a method for paying for milk as has the hundred weight method. That it would encourage the production of low grade milk and also watering and skimming. This method does not take into account that fat has a higher value than casein, but simply figures them as equal. As we have seen in discussing the method just preceding this one, Dr. Babcock fixes the relative values at 6.6 for fat 1.0 for casein. If his figures are accurate this test for milk value would not be fair.

The next method brought out by experimenters was the "Fat plus Casein." This method varies from the "Fat plus two" only in the fact that its users added the true amount of casein in the patron's milk to the butterfat content, instead of arbitrarily fixing this amount at 2%. All the other objections except this one which hold against the "Fat plus two" method would hold against the "Fat plus Casein" method. In addition it would require more time and double the chance for errors. Not recognizing the difference in value of fat and other solids is probably the greatest objection.

To do away with the extra labor of taking a test for Casein, in addition to the fat test, another method has been proposed. This is on the basis of "Fat plus calculated Casein." Instead of making the test for Casein, the lactometer is used and the amount of Casein is calculated from tables specially prepared. These tables are fairly accurate in most cases but apparently do not meet the requirements of exact accuracy. The same objections except that of labor hold good against this method as against the two experiments just discussed.

So far as I am able to find in my reading these various methods are the only ones to be advanced. Whatever their merits they, at least, show that noted experimenters are at work along dairy lines and that it is only a matter of time when we will have a method, simple and easily understood that will meet our requirements.

Theoretically, I am inclined to the belief that the method advanced by Dr. Babcock on the basis of "Yield and relative values of Cheese Solids" comes nearer being the best solution of the problem than do any of the other methods I have discussed. Taking into account the difference in values of fat and casein and the difference in yields caused by milks varying in the amount present of these cheese constituents, I am sure that we must all agree that this method would come very close to giving each patron his share of the proceeds. The problem confronting us in our territory is, "Do farmers want a change in method?" We want to run our factories so as to get as large a run as possible and as big profits as we can. We do not think that the patrons of our factories

would be at all favorable to a change, at least until some method that we can all understand and *see* is better, is introduced into general use. When such a method is introduced it must be by general state law. The method must be simple so as not to require special technical knowledge to handle. The Babcock test is simple but I have seen one or two inspectors who were not familiar enough with its principles to operate it understandingly and get accurate results. How, then, can we expect our cheesemakers, without special training outside their own line of making, to so operate chemical tests, accurately and understandingly and in such a way as to preclude all chance of complaint from our patrons? It would be business suicide for any one manufacturer in our territory to change methods without the consent and request from a large majority of his patrons. Competition is very severe among cheese factories, creameries and condenseries, all within reaching distance. And in many cases innovations are looked upon with suspicion. I realize that the conditions vary in different sections and I trust that the discussion which should follow on a subject that we are brought face to face with every day, will bring out all points vague to me and to most of my audience.

### ADDRESS.

MR. I. E. COLVIN, HUDSON.

Mr. President, Ladies and Gentlemen: A short time ago I received a letter from our secretary requesting me to handle the topic "Should the patrons receive their supply of cheese from the factory at wholesale prices." The letter further advised that the program was in the hands of the printer, leaving me only one recourse, and that to do the best I could.

Before discussing the subject at all I am going to answer it in the negative. That from the manufacturers point of view, cheese should not be cut at the factory at the wholesale price, or retail price either if he can avoid it.

My first reason for this is that through the medium of the wholesaler and retailer the factoryman disposes of his output. The retailer complains to his wholesaler that Mr. So and So, is cutting cheese out at his factory at the wholesale price, practically compelling him to quit handling cheese, as the patrons of the factory are all customers of his. This makes an unfriendly feeling with the wholesaler who is very likely using from 50 to 100 of your cheese each week.

Again you may be selling the retail grocer from the factory at one cent per pound above the wholesale price, and in the meantime cut a cheese at the factory, all the patrons taking some of it. The grocer's cheese, especially if the factory is located in a small town, which is generally the way, becomes dry and mouldy, or perhaps he loses part of it, in which case you are again in trouble, and the result is that the grocer discontinues cutting cheese and you are obliged to keep one cut at the factory most of the time to supply the patrons.

Let us now consider the disadvantage of cutting a cheese out at the wholesale price at the factory. The cheesemaker weighs a cheese in the morning and as the patrons drive in supplies each one with a pound or two, more generally a pound as the patrons of the factory as a rule are rather light buyers, leaving perhaps a part of the cheese to be disposed of later. During the day a few of the cheesemaker's friends drop in. Well have you a cheese cut? Yep. Lets see if it is a good one. It is generally demonstrated to the cheesemaker's satisfaction, as well as the dissatisfaction of the factoryman's pocketbook, and the patrons dividends are generally short the price of two or three pounds of cheese on every cheese cut, besides having realized only the wholesale price on the cheese cut.

Supposing on the other hand you sold this cheese to your retailer you would have received one cent per pound above the wholesale price, received full weight of your cheese, kept the retailer good natured, and the extra price received would go into your dividends instead of the loss sustained at the factory being taken out.

The patrons receive a good price for their milk and he can well afford the small difference he would have to pay the grocer. The grocer must live and were it not for the outlet that the grocery gives the cheese manufacturer, the patron would not realize the good prices for his milk.

The Vice President: I would like at this juncture, before we proceed farther to call your attention to the objection that has been previously made, that different representatives from the various interests represented, be chosen to assist in the preparation of the program for next year.

On motion the following gentlemen were appointed to help prepare the program for the cheese makers section; R. A. Murray, William Reed and I. E. Colvin.

A voice: What about cutting the big cheese?

Mr. Murray: In Wisconsin the way they do at the Cheese Makers Convention, the first prize cheese is cut and all the delegates get a piece of that cheese. Then a demonstration is made from the platform before the house, and the good points of the cheese are shown up, and this acts as an educator to the people. I think that would be a good thing for the cheesemakers of this Association to adopt.

## REPORT OF THE COMMITTEE ON RESOLUTIONS.

*Whereas:* the practical value of a dairy cow is determined by the difference between the cost of her feed and the value of her product, therefore, be it resolved, that we urge the officers of our Fair Association that they, to as large an extent as possible, plan to have considered the practical performance of the cow when placing their awards.

*Resolved:* That we condemn in the strongest possible terms any attempt to remove the tax on colored oleomargarine.

*Resolved:* That we thank the people of Detroit and the management

of the Wayne hotel for the use of these splendid display and audience rooms and for their genial hospitality while we were in their midst. Also that we thank the Michigan State Telephone company for the use of telephone installed for the convenience of the officers of the Association and the editor of the official paper, The Michigan Dairy Farmer.

*Whereas:* The Morton Trucking Company of Detroit has rendered indispensable service in moving the property of exhibitors in a careful manner, therefore, resolved, that we likewise extend to its officers a vote of thanks for their services.

*Whereas:* The assiduous attention to duty and unflagging loyalty to the Association, shown by our retiring secretary, S. J. Wilson, during an incumbency of eighteen years, entitles him to a testimonial of gratitude and appreciation for his services, be it resolved that we extend to him a sincere and heart-felt vote of thanks, as a mark of such appreciation for his services.

*Whereas:* The Agricultural College and State Dairy and Food Department are striving through the medium of breeders' associations and cow-testing associations to improve the dairy stock of the state, therefore, resolved, that we commend their efforts and pledge to them our hearty cooperation in this work.

*Resolved:* that the Michigan Dairy Farmer be, and the same is hereby designated as, the official paper of the Michigan Dairymen's Association.

N. P. HULL,  
GEORGE H. BROWNELL,  
JOHN I. BRECK,  
Committee on Resolutions.

# SCORES OF BUTTER, CHEESE, MILK AND CREAM, ALSO PREMIUMS.

Detroit, Mich., February 1, 2, 3, 4, 1910.

## CREAMERY BUTTER.

No.	Maker and Address.	Score.	Premium.
1.	Perry Carnes, Benton Harbor.....	88	
2.	John Shont, Borculo .....	85	
3.	A. J. Uphouse, Ida.....	91	\$5 00
4.	John E. Ross, Brown City.....	90	2 00
5.	A. W. Brooks, Brooklyn.....	87	
6.	Charles Bosch, Hudsonville, No. 3.....	92	6 00
7.	J. C. Harriman, Blissfield .....	87	
8.	J. F. Phillips, Pigeon .....	88	
9.	John Ebmyer, Sandusky .....	88	
10.	Bert Kleinheksel, Filmore Center.....	90	2 00
11.	Guy A. Bovee, Woodland .....	87	
12.	H. J. Greer, Mayville .....	85	
13.	F. MacNeill, Fostoria .....	86	
14.	George Soules, Hesperia .....	91	4 00
15.	H. F. Reynolds, Lucas .....	87	
16.	Lakeside Elgin Co., Grass Lake.....	91	4 00
17.	Alva Best, Remus .....	91½	5 00
18.	W. B. Liverance, East Lansing.....	92	6 00
19.	Albion Creamery Co., Albion .....	89½	
20.	S. R. Miles, Buchanan .....	94½	11 00
21.	R. A. Butler, Capac .....	91	4 00
22.	C. E. Renbarger, Niles .....	93	8 00
23.	H. B. Quackenbush, Iron Mountain.....	88½	
24.	John Batten, Avoca .....	93	8 00
25.	Irving W. Ellis, Davis.....	93½	9 00
26.	O. J. Lyon, Waterville, O.....	92	no premium
27.	Henry Munger, Reese .....	89	
28.	L. P. Hansen, Bronson .....	87	
29.	D. B. Ketchum, Leroy .....	91	4 00
30.	Edward Winter, Port Huron .....	93	8 00
31.	Winfield Vernon, Ewen .....	92	6 00
32.	Charles Marcero, New Baltimore.....	84½	
33.	Harry Biersborn, Mt. Clemens.....	90	2 00
34.	F. A. Chevrle, Imlay City .....	89	
35.	C. D. Lockwood, Athens .....	89	
36.	Clyde C. Swank, Buchanan, No. 1.....	91	4 00
37.	Walter Hall, Owosso .....	86	
38.	C. L. Starks, Caro .....	87	
39.	Albert McCourtie, Willis .....	93	8 00
40.	Wellington Best, Mt. Clemens .....	92	6 00
41.	Charles Wooslie, Morrice .....	87	
42.	O. A. Ellis, Rochester .....	93½	9 00
43.	R. G. Sortor, Breckenridge .....	90	2 00
44.	John Kloosterman, Clarksville .....	88	
45.	Clyde H. Stroh, Union City.....	90	2 00
46.	H. J. Sass, Pigeon .....	88½	
47.	George E. Mills, Armada .....	87	
48.	Archie R. Pierce, Scotts .....	90	2 00
49.	Eugene Austin, Coopersville .....	92	6 00

No.	Maker and Address.	Score.	Premium.
50.	F. P. Minnich, Charlotte .....	90	\$2 00
51.	A. C. Siebert, Nashville .....	87	
52.	Louis Wehrle, Marshall .....	90	2 00
53.	J. A. Beucke, New Lothrop, No. 4.....	85	
54.	L. E. Seelye, Lapeer .....	89	
55.	Frank W. Shaw, Goodrich .....	91	4 00
56.	Floyd Hendershott, Parma .....	93	8 00
57.	B. C. Martin, White Cloud .....	87	
58.	John Urban, Bay City, W. S.....	88	
59.	A. J. Armstrong, Amble .....	91½	5 00
60.	Windsor Bovee, Henderson .....	90	2 00
61.	Jesse L. Bosworth, Colon .....	93	8 00
62.	A. B. Conant, Mosherville .....	92	6 00
63.	Lavern Cobb, Vassar .....	89	
64.	E. G. Adams, Wayland .....	92	6 00
65.	Harry Swanson, Grant, No. 3.....	93	8 00
66.	E. F. Schwanbeck, Utica .....	90	2 00
67.	Bert G. Peterson, Clarks Lake.....	92	6 00
68.	L. C. Walte, Coldwater .....	87	
69.	P. G. Riker, White Pigeon .....	88	
70.	Volkert Barnes, Newaygo, No. 1.....	93	8 00
71.	Glen Overton, Burnips Corners .....	93	8 00
72.	B. A. Hillman, Metamora .....	87½	
73.	Caleb J. Wilson, Bauer .....	91	4 00
74.	Clyde E. King, Concord .....	93	8 00
75.	W. A. Sauber, New Haven .....	96	14 00
76.	George P. Sunday, Constantine .....	93½	9 00
77.	Chr. Anderson, Coloma .....	91	4 00
78.	Andrew Vivian, Monroe .....	93½	9 00
79.	Edgar D. Harlow, Burlington .....	90½	3 00
80.	J. F. Power, Quincy .....	93	8 00
81.	Russell Powers, Ravenna .....	92½	7 00
82.	Fred Kruschinsky, Gera .....	90	2 00
83.	F. J. Martin, Mulliken .....	83	
84.	Charles H. Wright, Tecumseh .....	85	
85.	Henry Lokker, Midland .....	88	
86.	Vasold Bros., Freeland .....	87	
87.	Abel Westra, Fremont .....	93	8 00
88.	Arthur S. Nunneley, Portland .....	86½	
89.	A. L. Brown, Wooster .....	87	
90.	John Vutgeven, Holland .....	94	10 00
91.	Chris. Leibum, Orleans .....	85	
92.	D. A. Hoodemaker, Salem .....	91	4 00
93.	Henry H. Faber, Zeeland, No. 2.....	91	4 00
94.	Fred W. Plumhoff, New Era .....	90	2 00
95.	C. A. Finch, Paw Paw .....	88	
96.	George T. Yeter, Eau Claire .....	92½	7 00
97.	Frank S. Jankoski, Hilliards .....	92	6 00
98.	Joseph Pohl, Westphalia .....	90	2 00
99.	J. T. Enterline, Wayne .....	91	4 00
100.	J. F. Phillips, Farmington .....	90	no premium

Nos. 8 and 100 were entered by the same party, not for premium.

## DAIRY BUTTER.

No.	Maker and Address.	Score.	Premium.
1.	Mrs. Fred F. Schochs, Troy .....	90	\$2 00
2.	Milo H. Edison, Grand Rapids, No. 2.....	90	2 00
3.	D. P. Miller, Almont .....	94	10 00
4.	P. D. Long, Grand Rapids, No. 8.....	85	
5.	Mrs. John Mersman, Grand Rapids, Box 42.....	85	
6.	Gilbert Harris, Dryden .....	82	

	Score.
7. Thomas B. Crawford, Almont .....	89
8. Mrs. M. H. Willsie, Caro .....	87
9. N. Van Buskirk, Capac .....	88

## PRINTS.

No.	Maker and Address.	Score.	Premium.
1.	C. E. Renbarger, Niles .....		\$5 00
2.	Geo. T. Yetter, Eau Claire .....		2 00
3.	Eugene Austin, Coppersville .....		
4.	H. B. Quackenbush, Iron Mountain .....		3 00
5.	L. E. Seelye, Lapeer .....		
6.	J. F. Phillips, Pigeon .....		
7.	J. T. Enterline, Wayne.....	Too late to score	
The butter was scored by P. H. Klefer, of New York City, Guy M. Wilson acting as clerk.			

## CHEESE.

No.	Maker and Address.	Score.	Premium.
1.	J. F. Phillips, Pigeon .....	92	\$3 18
2.	Geo. Marlow, Mayville .....	93½	4 77
3.	Wm. Blumlein, Frankenmuth .....	94	5 30
4.	R. L. Ives, Greenville .....	90	1 06
5.	Bert Roche, Springbrook .....	90	1 06
6.	M. B. Armstrong, Pontiac .....	92	3 18
7.	N. J. Eisenlord, Farmington.....	not for score.	
8.	J. Dennis, Novi .....	93½	4 77
9.	Lorenzo Stillwell, New Hudson .....	96	7 42
10.	Frank E. Bradley, Farmington .....	92	3 18
11.	N. J. Eisenlord, Farmington .....	93½	4 77
12.	Wm. Allen, Franklin .....	92½	3 71
13.	L. R. Sigafoose, Montgomery .....	92½	3 71
14.	Alger B. Barnes, Byron .....	95	6 36
15.	H. F. Fitzpatrick, Middleton .....	92	3 18
16.	Irving Reist, Maple Rapids .....	92	3 18
17.	Wm. W. Reed, Perry .....	95½	6 89
18.	G. H. Glasser, Bancroft .....	94½	5 83
The cheese was scored by Charles H. Dear of Novi.			

## MILK.

No.	Maker and Address.	Score.	Premium.
1.	H. F. Probert, Jackson .....	92½	\$3 36
2.	Leavenworth Bros., Grand Rapids, No. 1.....	97	7 58
3.	.....		
4.	.....		
5.	H. B. Wattles, Troy .....	97	7 68
6.	C. S. Bartlett, Pontiac .....	96	6 62
7.	G. S. Elliot, Troy .....	94	4 80
8.	Curtis & Curtis, Lyons .....	95¾	6 48
9.	L. C. Mount, Homer .....	96¼	6 86
10.	Geo. H. Kimball, Jr., Pontiac, No. 5.....	98	8 64

After completing the work on the milk Dr. Robinson was taken sick and obliged to go home so there was no score taken of the cream. It being no fault of those who had made entries, I have deemed it wise to pay them a premium of \$2.00 on each entry.



## CREAM.

No.	Maker and Address.	Premium.
1.	H. F. Probert, Jackson .....	\$2 00
2.	Leavenworth Bros., Grand Rapids .....	2 00
3.	L. R. Kerr, Sandusky .....	2 00
4.	Geo. A. True, Armada .....	2 00
5.	H. B. Wattles, Troy .....	2 00
6.	C. S. Bartlett, Pontiac .....	2 00
7.	G. S. Elliot, Troy .....	2 00
8.	Curtis & Curtis, Lyons .....	2 00
9.	L. C. Mount, Homer .....	2 00
10.	Geo. H. Kimball, Jr., Pontiac, No. 5.....	2 00

## FINANCIAL STATEMENT.

July 1, 1909 to June 30, 1910.

## CURRENT EXPENSE ACCOUNT.

## RECEIPTS.

Loan from Union Trust & Savings Bank.....	\$150 00
Appropriation from State Treasurer .....	300 00
Transferred from Promotion Account .....	191 23
Total.....	\$641 23

## DISBURSEMENTS.

1909.		
Aug. 7.	1070. T. F. Marston, exp. directors' meeting.....	\$3 44
" 7.	1071. W. F. Raven, exp. directors' meeting.....	10 53
" 7.	1072. Henry Rozema, exp. directors' meeting....	10 12
" 7.	1073. Geo. W. Soules, exp. committee meeting....	11 35
" 21.	1074. Leonard Freeman, exp. directors' meeting..	1 94
Sept. 8.	1075. C. R. Webb, exp. directors' meeting.....	3 72
" 25.	1077. S. J. Wilson, one-fourth salary.....	50 00
Oct. 11.	1078. Fred P. Baker, P. M. stamps.....	10 00
Nov. 6.	1080. Fred P. Baker, P. M. stamps.....	76 50
" 19.	1081. Fred P. Baker, P. M. stamps.....	10 00
Dec. 31.	1084. S. J. Wilson, exp. two trips to Detroit.....	5 64
1910.		
Jan. 5.	1085. Hamaker Printing Co., stationery.....	12 25
" 21.	1087. Union Trust & Savings Bank loan and int..	152 25
" 29.	1089. S. J. Wilson, one-fourth salary.....	50 00
Feb. 8.	1098. W. E. Cornell, exp. as stenographer.....	15 57
" 8.	1099. Violet Tesch, exp. Detroit meeting.....	12 17
" 8.	1100. Guy M. Wilson, exp. Detroit meeting.....	11 40
" 8.	1104. Eva Cousins, exp. Detroit meeting.....	17 00
" 11.	1105. S. J. Wilson, exp. Detroit, Jan. 27.....	2 35
Mar. 28.	1209. S. J. Wilson, one-fourth salary.....	50 00
May 9.	1211. W. E. Cornell, stenographic report.....	75 00
June 13.	1212. S. J. Wilson, one-fourth salary.....	50 00
Total .....		\$641 23

## SUMMARY OF EXPENSES.

Directors' meeting .....	\$41 10
Secretary's salary .....	200 00
Stamps .....	96 50
Stationery and printing .....	12 25
Stenographic report .....	75 00
Expenses annual meeting .....	64 13
Loan and interest paid .....	152 25

Total..... \$641 23

## PROMOTION ACCOUNT.

## RECEIPTS.

1909.	
July 1.	To balance ..... \$147 68
Nov. 15.	Membership fees at office ..... 17 00
" 15.	F. C. Barger & Co., advertising ..... 5 50
Dec. 4.	Helmer Rabild, life membership ..... 10 00
" 4.	W. N. Priddy, advertising ..... 3 00
" 4.	Isaac W. Davis Co., advertising ..... 5 50
" 4.	Membership fees at office ..... 15 00
1910.	
Jan. 5.	Membership fees at office ..... 6 00
" 5.	Farmers' Mutual Lightning Ins. Co., adv. .... 5 50
" 5.	Port Huron Salt Co., insert adv. and space. .... 24 50
" 29.	Iowa Dairy Separator Co., space ..... 10 00
" 29.	Farmers' Handy Wagon Co., adv. space. .... 22 50
" 29.	Burnap Bld. & Supply Co., adv. .... 10 00
" 29.	Poughkeepsie Foundry & Machine Co., adv. .... 5 50
" 29.	Gleason & Lansing, adv. .... 10 00
" 29.	A. F. Spitler & Co., adv. .... 5 50
" 29.	Diamond Crystal Salt Co., adv. and space. .... 30 00
" 29.	Willard McDonald, adv. .... 5 50
" 29.	American Milling Co., adv. .... 10 00
" 29.	DeLaval Separator Co., adv. .... 20 00
" 29.	DeLaval Separator Co., space ..... 20 00
" 29.	Wasson Stanchion Co., adv. .... 5 50
" 29.	Lewis Mears Co., adv. .... 10 00
" 29.	D. O. Wiley & Co., adv. .... 5 00
" 29.	American Butter and Cheese Co., adv. .... 10 00
" 29.	Fairmount Glass Works, adv. .... 3 00
" 29.	Blue Valley Creamery Co., adv. .... 5 50
" 29.	Geo. D. Pohl Mfg. Co., adv. .... 5 50
" 29.	John W. Ladd Co., adv. and space. .... 70 50
" 29.	Booth Cold Storage Co., adv. .... 10 00
" 29.	Kiel Woodenware Co., adv. .... 10 00
" 29.	Potter & Williams, adv. .... 10 00
" 29.	Membership fees at office ..... 17 00
Feb. 5.	Riverside Co., adv. .... 5 50
" 5.	F. E. Boehmcke & Co., adv. .... 10 00
" 5.	Macdonald Bros., adv. .... 5 00
" 5.	Adder Machine Co., adv. .... 10 00
" 5.	Colonial Salt Co., space ..... 10 00
" 5.	Adder Machine Co., space. .... 12 50
" 5.	Northern Dairy Supply Co., space. .... 12 50
" 5.	Worcester Salt Co., space ..... 20 00
" 5.	Burroughs Adding Machine Co., space. .... 20 00
" 5.	Torsion Balance Co., space ..... 10 00
" 5.	Sharples Separator Co., space ..... 12 50
" 5.	Riverside Co., space ..... 10 00

Feb.	5.	Superior Churn Co., space .....	\$10 00
"	5.	Armstrong Cork Co., space .....	10 00
"	5.	Fitch Cornell Co., space .....	5 00
"	5.	F. D. Roberts, space .....	5 00
"	5.	Charles Torrey, space .....	5 00
"	5.	American Steam Pump Co., adv.....	10 00
"	5.	Marshall Dairy Laboratory, adv.....	5 50
"	5.	Dairy Association, adv. ....	10 00
"	5.	W. R. Brice & Co., adv.....	5 50
"	5.	D. H. Burrell & Co., adv.....	10 00
"	5.	J. G. Cherry Co., adv.....	5 50
"	5.	O. H. Robertson, adv. ....	5 50
"	5.	Wallace B. Crumb, adv.....	5 50
"	5.	J. D. Stout & Co., adv.....	10 00
"	5.	Membership fees at Detroit .....	242 00
"	8.	Elgin Butter Tub Co., adv.....	10 00
"	8.	Harris & Throop, adv. ....	5 00
"	8.	Lane Bros., adv. ....	5 50
"	8.	P. F. Brown Co., adv.....	10 00
"	8.	Chicago Car Seal Co., adv.....	5 50
"	8.	G. M. Wattles & Son, adv.....	10 00
"	8.	Coyne Bros., adv. ....	10 00
"	8.	Wells Richardson Co., adv. and space.....	15 50
"	14.	Creamery Pkg. Mfg. Co., space.....	43 00
"	14.	M. L. Brown & Co., adv.....	10 00
"	14.	Wykes & Co., adv. ....	20 00
"	14.	Geo. M. Baer & Co., adv.....	5 00
"	14.	Dewey Bros. Co., adv. ....	10 00
"	14.	Chas. H. Burmeister & Co., adv.....	3 00
"	14.	Bowen & Quick, adv. ....	5 50
"	14.	J. B. Ford Co., adv. and space.....	22 50
"	14.	L. C. Bates Co., adv.....	5 50
"	14.	O. K. Paper Pail Co., adv.....	10 00
"	14.	Chris. Hansen's Lab., adv. and space.....	15 50
"	16.	A. H. Barber Creamery Supply Co., adv. and space.....	30 00
"	16.	Frank Wise, adv. ....	5 00
"	16.	Edwin Prescott, adv. ....	3 00
"	16.	Spencer & Howes, adv. ....	10 00
"	16.	Barrett Mfg. Co., adv. ....	10 00
"	16.	Detroit Vacuum Cleaner Co., space .....	5 00
"	16.	Membership fees at office from exhibits.....	94 00
"	18.	Sullivan Oil Co., adv. ....	10 00
"	18.	Creamery Pkg. Mfg. Co., adv.....	10 00
"	18.	Standard Oil Co., adv. ....	10 00
"	18.	John W. Ladd Co., space .....	10 00
"	24.	Detroit Hotel Assn., adv. ....	75 00
"	24.	Latshaw Feerst, adv. ....	5 50
"	24.	Thatcher Mfg. Co., space .....	10 00
"	24.	Fitch Cornell Co., adv. ....	5 50
"	24.	Union Storage Co., adv. ....	5 00
Mar.	3.	Elgin Dairy Report, adv. ....	5 00
"	3.	Consolidated Coal Co., adv. ....	10 00
"	3.	Empire Cream Separator Co., adv. and space.....	25 50
"	10.	Nebraska Milk Pasteurizing Co., space.....	10 00
"	10.	E. W. Ross Co., adv. and space.....	25 50
"	10.	Vermont Farm Machine Co., adv. and space.....	45 00
"	15.	Kalamazoo Tank & Silo Co., adv. and space.....	5 50
"	15.	J. E. Bartlett Co., adv. and space.....	15 50
"	28.	Sturges & Burn Mfg. Co., adv. and space.....	20 00
"	28.	International Harvester Co., adv.....	10 00
"	28.	Iowa Dairy Separator Co., space.....	10 00
"	28.	Roy Bros., adv. ....	3 00
"	31.	Membership fees at office .....	5 00

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Mar. 31.	International Harvester Co., space .....	\$25 00
Apr. 12.	Buhl Stamping Co., adv. ....	10 00
May 10.	Industrial Construction Co., space .....	20 00

Total ..... \$1,797 68

## DISBURSEMENTS.

1909.		
Sept. 25.	1076. S. J. Wilson, Neostyle copying press.....	\$35 00
Nov. 6.	1079. Neostyle Co., supplies .....	2 25
Dec. 21.	1082. Eva Cousins, 3 months labor on books....	78 00
" 23.	1083. Earl Saunders, drawings exhibition room..	5 00
1910.		
Jan. 21.	1086. Fred P. Baker, P. M. stamps .....	70 00
" 26.	1088. Agnes Smith, mailing programs .....	6 00
Feb. 3.	1090. Gray Bros. Elec. Co., 4 lights.....	4 00
" 4.	1091. Geo. W. Coons, nightwatch .....	12 00
" 4.	1092. Ira O. Johnson, laboratory exp.....	11 50
" 4.	1093. C. L. Davis, supt. exhibits.....	25 00
" 4.	1094. Edward Walton, janitor .....	5 00
" 4.	1095. J. T. Mayhew, material and building booths	215 00
" 4.	1096. Moreton Truck Co., transferring exhibits..	100 00
" 8.	1097. Hamaker Printing Co., program book.....	220 65
" 8.	1101. Robert Johnston, exp. as speaker.....	20 00
" 8.	1102. P. Bland Ptg. Co., score cards and ballots.	13 75
" 8.	1103. Dieges & Clust, badges .....	65 00

Total ..... \$888 15

## PREMIUMS.

Feb. 14.	1106. A. J. Uphouse .....	\$5 00
" 14.	1107. John E. Ross .....	2 00
" 14.	1108. Charles Bosch .....	6 00
" 14.	1109. Bert Kleinheksel .....	2 00
" 14.	1110. Geo. W. Soules .....	4 00
" 14.	1111. Lakeside Butter & Cheese Co.....	4 00
" 14.	1112. Alva Best .....	5 00
" 14.	1113. W. B. Liverance .....	6 00
" 14.	1114. S. R. Miles .....	11 00
" 14.	1115. R. A. Butler .....	4 00
" 14.	1116. C. E. Renbarger .....	8 00
" 14.	1117. John Batten .....	8 00
" 14.	1118. Irving W. Ellis .....	9 00
" 14.	1119. D. B. Ketchum .....	4 00
" 14.	1120. Edward Winter .....	8 00
" 14.	1121. Winfield Vernon .....	6 00
" 14.	1122. Harry Biersborn .....	2 00
" 14.	1123. Clyde C. Swank .....	4 00
" 14.	1124. Albert McCourtie .....	8 00
" 14.	1125. Wellington Best .....	6 00
" 14.	1126. O. A. Ellis .....	9 00
" 14.	1127. R. G. Sortor .....	2 00
" 14.	1128. Clyde H. Stroh .....	2 00
" 14.	1129. Archie R. Pierce .....	2 00
" 14.	1130. Eugene Austin .....	6 00
" 14.	1131. F. P. Minnich .....	2 00
" 14.	1132. Louis Wehrle .....	2 00
" 14.	1133. Frank W. Shaw .....	4 00
" 14.	1134. Floyd Hendershott .....	8 00
" 14.	1135. A. J. Armstrong .....	5 00
" 14.	1136. Windsor Bovee .....	2 00
" 14.	1137. Jesse L. Bosworth .....	8 00
" 14.	1138. A. B. Conant .....	6 00

Feb.	14.	1139.	E. G. Adams .....	\$6 00	
"	14.	1140.	Harry Swanson .....	8 00	
"	14.	1141.	E. F. Swanbeck .....	2 00	
"	14.	1142.	Bert G. Peterson .....	6 00	
"	14.	1143.	Volkert Barnes .....	8 00	
"	14.	1144.	Glen Overton .....	8 00	
"	14.	1145.	Caleb J. Wilson .....	4 00	
"	14.	1146.	Clyde E. King .....	8 00	
"	14.	1147.	W. A. Sauber .....	14 00	
"	14.	1148.	Geo. P. Sunday .....	9 00	
"	14.	1149.	Christian Anderson .....	4 00	
"	14.	1150.	Andrew Vivian .....	9 00	
"	14.	1151.	Edgar B. Harlow .....	3 00	
"	14.	1152.	J. F. Powers .....	8 00	
"	14.	1153.	Russel Powers .....	7 00	
"	14.	1154.	Fred Kruschinsky .....	2 00	
"	14.	1155.	Abel Westra .....	8 00	
"	14.	1156.	John Vugteveen .....	10 00	
"	14.	1157.	D. A. Hoodemaker .....	4 00	
"	14.	1158.	Henry H. Faber .....	4 00	
"	14.	1159.	Fred W. Plumhoff .....	2 00	
"	14.	1160.	Geo. T. Yetter .....	7 00	
"	14.	1161.	Frank S. Jankoski .....	6 00	
"	14.	1162.	Joseph Pohl .....	2 00	
"	14.	1163.	J. T. Enterline .....	4 00	
"	14.	1164.	Mrs. Fred S. Schoch .....	2 00	
"	14.	1165.	Milo H. Edison .....	2 00	
"	14.	1166.	D. P. Miller .....	10 00	
"	14.	1167.	C. E. Renberger .....	5 00	
"	14.	1168.	Geo. T. Yetter .....	2 00	
"	14.	1169.	H. B. Quackenbush .....	8 00	
"	14.	1170.	J. F. Phillips .....	3 18	
"	14.	1171.	Geo. Marlow .....	4 77	
"	14.	1172.	Wm. Blumlein .....	5 30	
"	14.	1173.	R. L. Ives .....	1 06	
"	14.	1174.	Bert Roche .....	1 06	
"	14.	1175.	M. B. Armstrong .....	3 18	
"	14.	1176.	J. Dennis .....	4 77	
"	14.	1177.	Lorenzo Stilwell .....	7 42	
"	14.	1178.	Frank E. Bradley .....	3 18	
"	14.	1179.	N. J. Eisenlord .....	4 77	
"	14.	1180.	Wm. Allen .....	3 71	
"	14.	1181.	L. R. Sigafosse .....	3 71	
"	14.	1182.	Alger B. Barnes .....	6 30	
"	14.	1183.	H. P. Fitzpatrick .....	3 18	
"	14.	1184.	C. Irving Rust .....	3 18	
"	14.	1185.	Wm. W. Reed .....	6 89	
"	14.	1186.	G. H. Glasser .....	5 83	
"	26.	1187.	Eva Cousins, labor January and February.		\$48 00
Mar.	3.	1188.	H. F. Probert .....	3 36	
"	3.	1189.	Leavenworth Bros. ....	7 68	
"	3.	1190.	H. B. Wattles .....	7 68	
"	3.	1191.	C. S. Bartlett .....	6 62	
"	3.	1192.	G. S. Elliott .....	4 80	
"	3.	1193.	Curtis & Curtis .....	6 48	
"	3.	1194.	L. C. Mount .....	6 86	
"	3.	1195.	Geo. H. Kimball, Jr. ....	8 64	
"	3.	1196.	H. F. Probert .....	2 00	
"	3.	1197.	Leavenworth Bros. ....	2 00	
"	3.	1198.	L. R. Kerr .....	2 00	
"	3.	1199.	Geo. A. True .....	2 00	
"	3.	1200.	H. B. Wattles .....	2 00	
"	3.	1201.	C. S. Bartlett .....	2 00	

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Mar.	3.	1202.	G. S. Elliott .....	\$2 00	
"	3.	1203.	Curtis & Curtis .....	2 00	
"	3.	1204.	L. C. Mount .....	2 00	
"	3.	1205.	Geo. H. Kimball, Jr.....	2 00	
Total premiums .....					\$490 61
Mar.	8.	1206.	Violet W. Tesch, lettering diplomas.....	\$6 84	
"	28.	1207.	Hamaker Printing Co., printing .....	3 50	
"	28.	1208.	S. J. Wilson, incidental expenses.....	10 27	
Apr.	29.	1210.	Frank S. Jankoski, for stolen butter.....	5 40	
June	21.	1213.	S. J. Wilson, expenses .....	7 85	
"	30.		Transferred to Current Expense .....	191 23	
					<u>\$1,651 85</u>
Total .....					
Total receipts .....				\$1,797 68	
Total disbursements .....				1,651 85	
Balance in treasurer's hands July 1, 1910.....					\$145 83

## SUMMARY OF DISBURSEMENTS.

Neostyle copying press .....	\$35 00	
Labor on program book .....	132 00	
Printing program book .....	220 65	
Stamps for program book .....	70 00	
Badges .....	65 00	
Expense Detroit meeting .....	421 52	
Premiums .....	490 61	
Butter stolen .....	6 75	
Lettering diplomas .....	6 84	
Membership fees returned .....	4 00	
Over deposit .....	2 00	
Office supplies .....	5 75	
Express and telephone .....	50	
Total .....		\$1,460 62
Transferred to Current Expense Account .....		191 23
Total disbursements .....		<u>\$1,651 85</u>
Total receipts, both accounts .....	\$2,438 91	
Total disbursements, both accounts .....	2,293 08	
Balance in treasurer's hands July 1.....		\$145 83

## OFFICERS.

From July 1, 1910, to June 30, 1911.

## PRESIDENT.

T. F. Marston ..... Bay City.

## VICE-PRESIDENT.

F. H. Vandenboom ..... Marquette.

## SECRETARY-TREASURER.

E. S. Powers ..... Hart.

## DIRECTORS.

Leonard Freeman ..... Fenton.

R. F. Frary ..... Lapeer.

W. F. Raven ..... East Lansing.

Claude A. Grove ..... Litchfield.

Chas. R. Webb ..... Chesaning.

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